

ENERGY TOP B

ISO 9001 : 2000
CERTIFIED COMPANY



ISTRUZIONE PER L'USO L'INSTALLAZIONE E LA MANUTENZIONE
INSTRUCTIONS FOR USE, INSTALLATION AND MAINTENANCE
INSTRUCTIONS D'UTILISATION, D'INSTALLATION ET D'ENTRETIEN
INSTRUCCIONES DE USO, INSTALACIÓN Y MANTENIMIENTO
INSTRUÇÕES DE INSTALAÇÃO, UTILIZAÇÃO E MANUTENÇÃO



- Carefully read the warnings in this instruction booklet since they provide important information on safe installation, use and maintenance.
- This instruction booklet is an integral part of the product and must be carefully kept by the user for future reference.
- If the unit is sold or transferred to another owner or if it is to be moved, always make sure that the booklet accompanies the boiler so that it can be consulted by the new owner and/or installer.
- Installation and maintenance must be carried out by professionally qualified personnel, according to current regulations and the manufacturer's instructions.
- Incorrect installation or poor maintenance can cause damage or physical injury. The manufacturer declines any responsibility for damage caused by errors in installation and use or by failure to follow the manufacturer's instructions.
- Before carrying out any cleaning or maintenance operation, disconnect the unit from the electrical power supply using the switch and/or the special cut-off devices.
- In case the unit breaks down and/or functions poorly, deactivate it, do not make any attempt to repair it or directly intervene. Contact professionally qualified personnel. Any repair/replacement of products must only be carried out by qualified professional personnel using exclusively genuine parts. Failure to comply with the above could affect the safety of the unit.
- Periodical maintenance carried out by qualified personnel is essential for guaranteeing good operation of the unit.
- This unit must only be used for the purpose for which it was designed. Any other use is considered improper and therefore hazardous.
- After removing the packing, check the integrity of the contents. Packing materials must not be left within the reach of children as they are potentially hazardous.
- In case of doubt do not use the unit, and contact the supplier.
- The images shown in this manual are a simplified representation of the product. In this representation there may be slight, unimportant differences with the supplied product.

	This symbol indicates "Caution" and is placed next to all safety warnings. Strictly follow these instructions in order to avoid danger and damage to persons, animals and things.
	This symbols calls attention to a note or important notice.

Declaration of conformity



Manufacturer: FERROLI S.p.A.

Address: Via Ritonda 78/a 37047 San Bonifacio VR Italy

declares that this unit complies with the following EU directives:

- Gas Appliance Directive 90/396
- Efficiency Directive 92/42
- Low Voltage Directive 73/23 (amended by 93/68)
- Electromagnetic Compatibility Directive 89/336 (amended by 93/68)

President and Legal Representative
Cav. del Lavoro
Dante Ferroli

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1. Operating instructions

1.1 Introduction

Dear Customer,

Thank you for choosing **ENERGY TOP B**, a latest-generation heat generator featuring **FERROLI** advanced design and cutting-edge technology. Please read this manual carefully since it provides important information on safe installation, use and maintenance.

ENERGY TOP B is a high-efficiency modular premix condensing **heat generator for heating with very** low emissions, running on natural gas or LPG and arranged for installation in cascade.

Each module **ENERGY TOP B** is equipped with one (version **ENERGY TOP B 80 - 125**) or two (version **ENERGY TOP B 160 - 250**) aluminium finned tube exchangers with steel premix burners, housed in a vertical cabinet in epoxy powder coated steel resistant to atmospheric agents.

The plumbing circuits of the exchangers, each equipped with its own local circulating pump, run into system delivery and return manifolds inside the module. The control system has a microprocessor, user interface with a large display and advanced cascade control functions.



1.2 Control panel

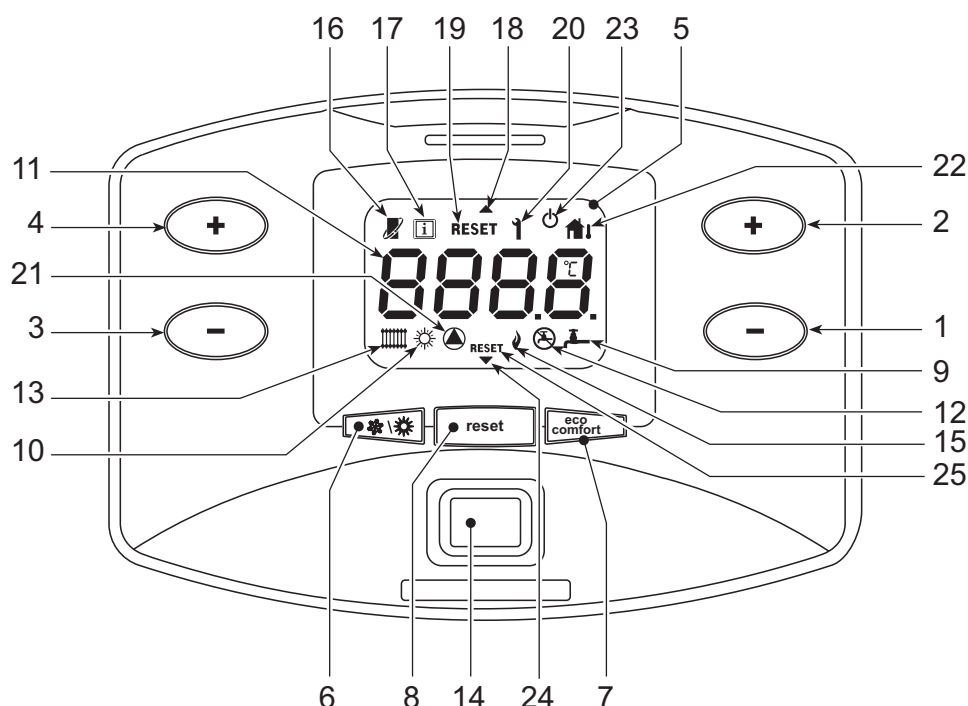


fig. 1 - Control panel

The control panel is located inside the cabinet. To access it, open the front door with the special key supplied.

Key

- | | |
|--|--|
| 1 = DHW temperature setting decrease button (with optional hot water tank installed) | 20 = Fault |
| 2 = DHW temperature setting increase button (with optional hot water tank installed) | 21 = Circulating pump On |
| 3 = Heating system temperature setting decrease button | 22 = Appears on connecting the external probe (optional) |
| 4 = Heating system temperature setting increase button | 23 = Boiler Off |
| 5 = Display | 24 = Bottom boiler shell |
| 6 = Summer/Winter mode selection button | 25 = Bottom boiler shell system fault reset request (model ENERGY TOP B 160 - 250 only) |
| 7 = Economy/Comfort mode selection (with optional hot water tank installed) and unit On/Off button | |
| 8 = Reset button | |
| 9 = DHW operation (with optional hot water tank installed) | |
| 10 = Summer mode | |
| 11 = Multifunction | |
| 12 = Eco (Economy) mode (with optional hot water tank installed) | |
| 13 = Heating mode | |
| 14 = Unit On / Off button | |
| 15 = Burner On | |
| 16 = Appears on connecting the Remote Timer Control (optional) | |
| 17 = Information symbol | |
| 18 = Top boiler shell | |
| 19 = Top boiler shell system fault reset request | |

Indication during operation**Heating**

A heating demand (generated by the Room Thermostat or Remote Timer Control or 0-10 Vdc signal) is indicated by activation of the circulating pump and the radiator (details 13 and 21 - fig. 1).

The display (detail 11 - fig. 1) shows the actual heating delivery temperature and, during DHW standby time, the message “d”. Activation of the arrows (details 18 and 24 - fig. 1) indicates which boiler shell is on.

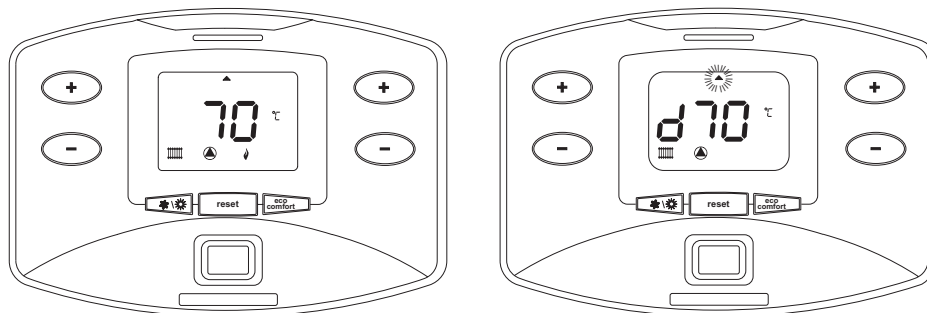


fig. 2

DHW circuit (with optional hot water tank installed)

A hot water tank heating demand is indicated by activation of the circulating pump and the tap (details 9 and 21 fig. 1). The display (detail 11 - fig. 1) shows the actual hot water tank sensor temperature and, during heating standby time, the message “d”. Activation of the arrows (details 18 and 24 - fig. 1) indicates which boiler shell is on.

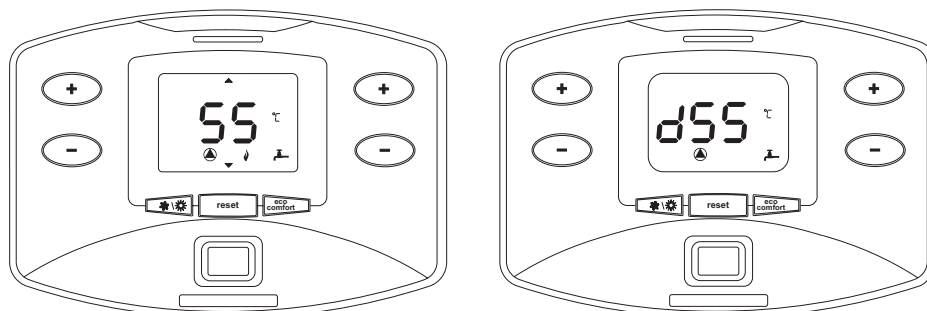





fig. 3 -

Exclude hot water tank (economy)

Hot water tank temperature maintaining/heating can be excluded by the user. If excluded, domestic hot water will not be delivered. The hot water tank can be deactivated by the user (ECO mode) by pressing the button  (detail 7 - fig. 1). In ECO mode the display activates the symbol  (detail 12 - fig. 1). To activate COMFORT mode, press the button  (detail 7 - fig. 1) again.

1.3 Turning on and off

Boiler lighting

Press the On/Off button (detail 14 fig. 1).

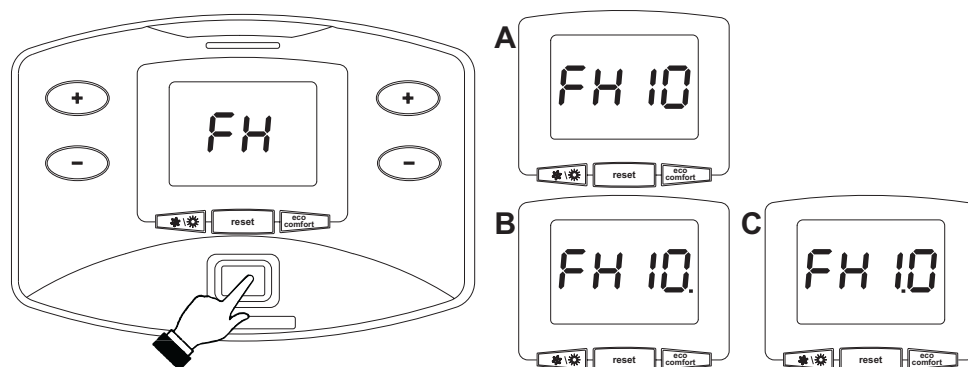


fig. 4 - Boiler lighting

- For the following 120 seconds the display will show FH which identifies the heating system air venting cycle.
- During the first 10 seconds the display will also show the software version of the cards:
 - A** = Display card software version
 - B** = Top boiler shell control unit software version
 - C** = Bottom boiler shell control unit software version (model **ENERGY TOP B 160 - 250** only)
- Open the gas cock ahead of the boiler.
- When the message FH disappears, the boiler is ready to operate automatically whenever there is a room thermostat demand.

Turning the boiler off

Press the button  (detail 7 - fig. 1) for 5 seconds.

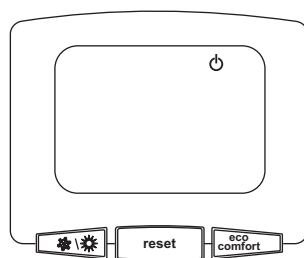


fig. 5 - Turning the boiler off

When the boiler is turned off, the electronic board is still powered.

Domestic hot water (with optional hot water tank installed) and heating operation are disabled. The antifreeze system remains activated.

To relight the boiler, press the button  (detail 7 fig. 1) again for 5 seconds.

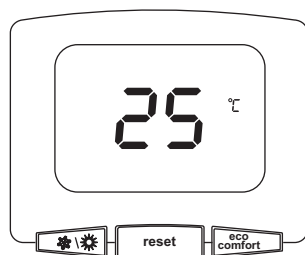


fig. 6

The boiler will be immediately ready to operate whenever domestic hot water is drawn (with optional hot water tank installed) or in case of a room thermostat demand.

To completely disconnect the power to the unit, press the button detail 14 fig. 1.



The antifreeze system does not work when the power and/or gas to the unit are turned off. To avoid damage caused by freezing during long idle periods in winter, it is advisable to drain all water from the boiler, DHW circuit and system; or drain just the DHW circuit and add a suitable antifreeze to the heating system, complying with that prescribed in sec. 2.3.

1.4 Adjustments

Summer/Winter changeover

Press the button  detail 6 - fig. 1 for 1 second.

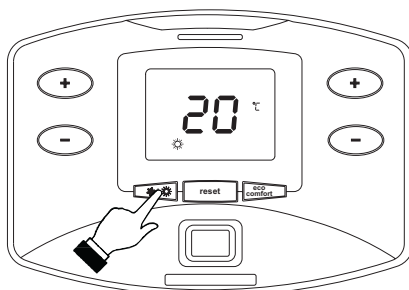




fig. 7

The display activates the Summer symbol detail 10 - fig. 1. The heating function is deactivated, whereas the possible production of domestic hot water (with optional external hot water tank) remains activated. The antifreeze system remains activated.

To deactivate Summer mode, press the button  (detail 6 - fig. 1) again for 1 second.

Heating temperature adjustment

Operate the heating buttons   (details 3 and 4 - fig. 1) to adjust the temperature from a min. of 20 °C to a max. of 90 °C.

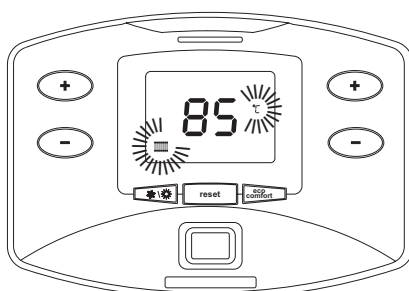




fig. 8

DHW temperature adjustment (with optional hot water tank installed)

Operate the DHW buttons   (details 1 and 2 - fig. 1) to adjust the temperature from a min. of 10 °C to a max. of 65°C.

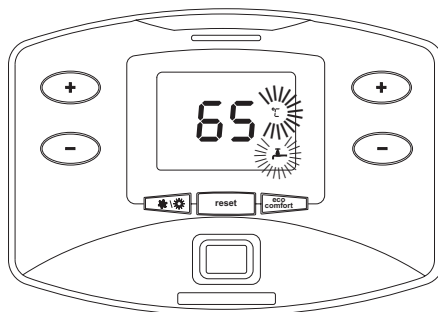


fig. 9

Room temperature adjustment (with optional room thermostat)



Using the room thermostat, set the temperature required in the rooms.

Room temperature adjustment (with optional remote timer control)

Using the remote timer control, set the temperature desired in the rooms. The boiler unit will set the system water according to the required room temperature. For information on the remote timer control, please refer to its user's manual.




Sliding Temperature

When the optional external probe is installed the corresponding symbol (detail 22 - fig. 1) is activated on the control panel display (detail 5 - fig. 1). The boiler control system operates with "Sliding Temperature". In this mode, the temperature of the heating system is adjusted according outside weather conditions, in order to ensure high comfort and energy saving throughout the year. In particular, as the outside temperature increases the system delivery temperature decreases according to a given "compensation curve".

With Sliding Temperature adjustment, the temperature set with the heating buttons   (details 3 and 4 - fig. 1) becomes the maximum system delivery temperature. It is advisable to set a maximum value to allow system adjustment throughout its useful operating range..

The boiler must be adjusted at the time of installation by qualified personnel. Possible adjustments can in any case be made by the user to improve comfort.

Compensation curve and curve offset

Press the button  (detail 8 - fig. 1) for 5 seconds, to display the actual compensation curve (fig. 10) which can be modified with the DHW buttons   (details 1 and 2 - fig. 1).

Adjust the required curve from 1 to 10 according to the characteristic (fig. 12).

By setting the curve to 0, sliding temperature adjustment is disabled.

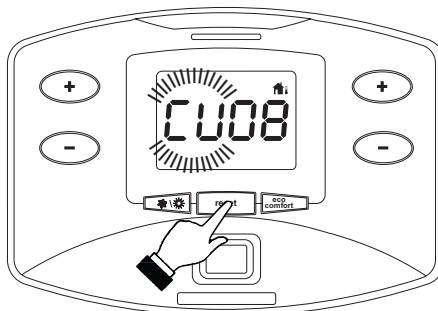






fig. 10 - Compensation curve

Press the heating buttons   (details 3 and 4 - fig. 1) to access parallel curve offset (fig. 13), modifiable with the DHW buttons   (details 1 and 2 - fig. 1).

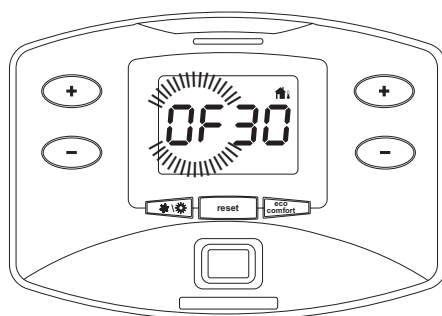



fig. 11 - Parallel curve offset

Press the button  (detail 8 - fig. 1) again for 5 seconds to exit parallel curve adjustment mode.

If the room temperature is lower than the required value, it is advisable to set a higher order curve and vice versa. Proceed by increasing or decreasing in steps of one and check the result in the room.

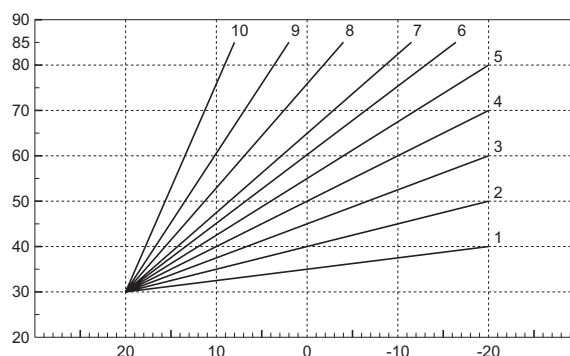


fig. 12 - Compensation curves

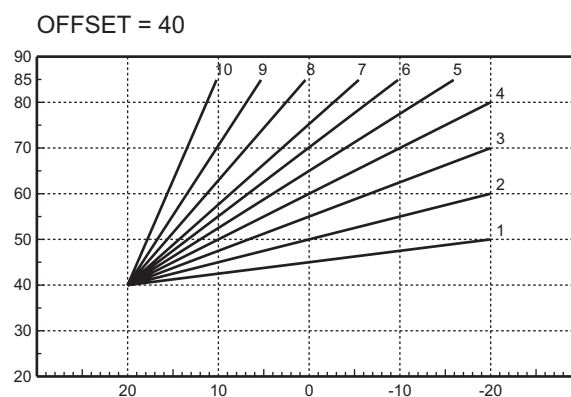
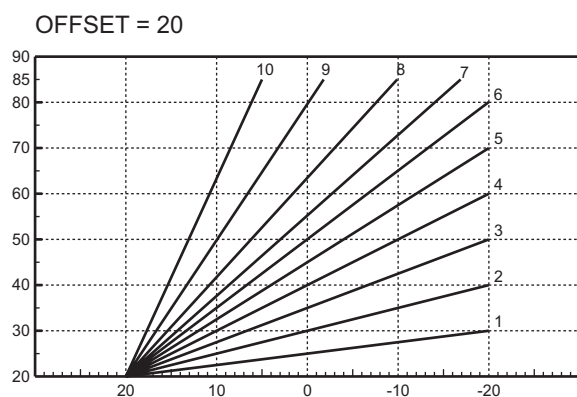




fig. 13 - Example of parallel compensation curve shift



If the Remote Timer Control (optional) is connected to the boiler, the above adjustments are managed according to that given in table 1.

Table. 1

Heating temperature adjustment	Adjustment can be made from the Remote Timer Control menu and the boiler control panel.
DHW temperature adjustment (with optional hot water tank installed)	Adjustment can be made from the Remote Timer Control menu and the boiler control panel.
Summer/Winter changeover	Summer mode has priority over a possible Remote Timer Control heating demand.
Eco/Comfort selection (with optional hot water tank installed)	On disabling DHW from the Remote Timer Control menu, the boiler selects the Economy mode. In this condition, the button  (detail 7 - fig. 1) on the boiler panel is disabled.
	On enabling DHW from the Remote Timer Control menu, the boiler selects the Comfort mode. In this condition it is possible select one of the two modes with the button  (detail 7 - fig. 1).
Sliding Temperature	Both the Remote Timer Control and the boiler card manage Sliding Temperature adjustment: of the two, the Sliding Temperature of the boiler card has priority.

Water system pressure adjustment

The filling pressure with the system cold must be approx. 1.0 bar. If the system pressure falls to values below minimum, the boiler card will activate fault F37 (fig. 14). Flashing of the arrows (details 18 and 24 - fig. 1) together with the error code indicates which boiler shell is in fault status.

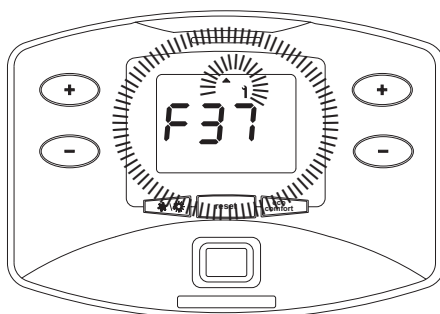


fig. 14 - System low pressure fault



Once the system pressure is restored, the boiler will activate the 120-second air venting cycle indicated on the display by FH.

2. Installation

2.1 General Instructions

THE BOILER MUST ONLY BE INSTALLED BY QUALIFIED PERSONNEL, IN COMPLIANCE WITH ALL THE INSTRUCTIONS GIVEN IN THIS TECHNICAL MANUAL, THE PROVISIONS OF CURRENT LAW, THE NATIONAL AND LOCAL REGULATIONS, AND THE RULES OF PROPER WORKMANSHIP.

ENERGY TOP B is a heat generator arranged to operate alone or in cascade (bank). When two or more generators are installed in cascade with the original kits ENERGY TOP B, respecting the prescriptions FERROLI of this manual, they can be considered as a single heat generator of total power equal to the sum of the powers of all the units connected in cascade.

All the requirements of the current standards and regulations applicable to this "equivalent" total heating capacity generator must be met. In particular, the place of installation, safety devices and fume exhaust system must be adequate for the total heating capacity of the bank of units.

In fact, each ENERGY TOP B is a complete and independent heat generator, equipped with its own safety devices. In case of overtemperature, no water or no circulation in the unit, the protection devices cause the unit to shutdown, preventing its operation.

The installation instructions given in the following sections concern both the single unit and connection in cascade.

Given below are the possible configurations for connection in cascade.

Configurations in line

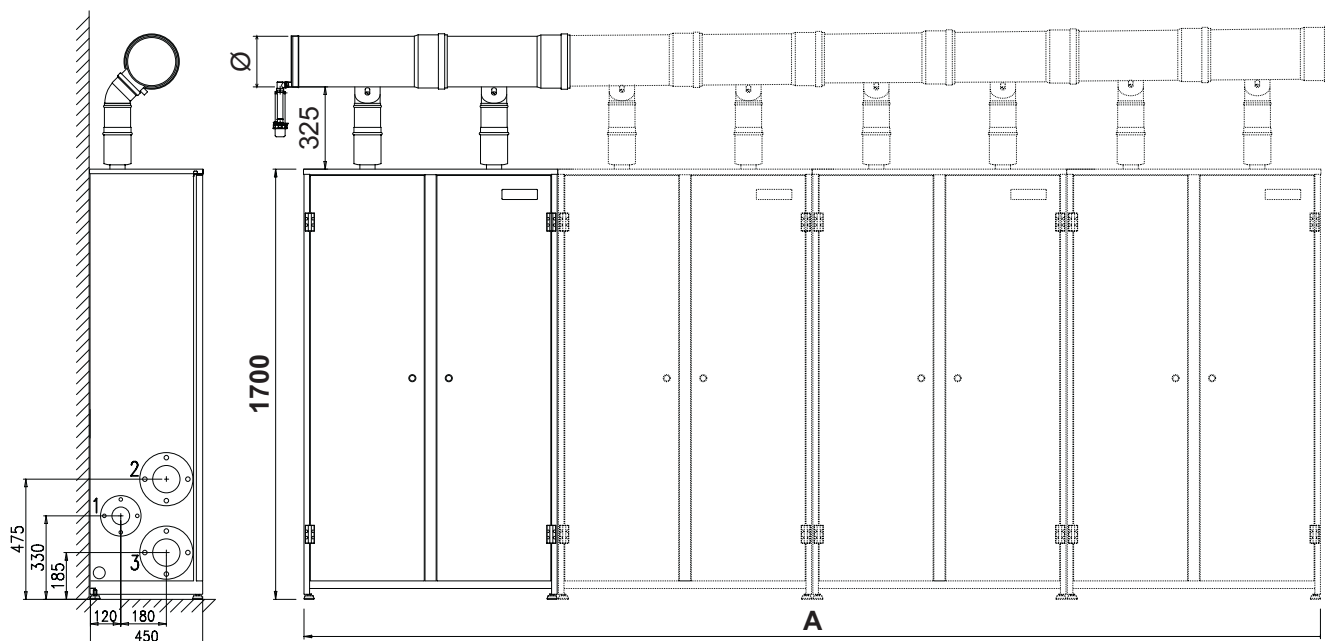


fig. 15 - Configuration - in line

Table. 2 - Configurations in line

Total power	Combinations					
kW	Module 1	Module 2	Module 3	Module 4	Ø	A
80	80	/	/	/	/	500
125	125	/	/	/	/	500
160	160		/	/	200	1000
250	250		/	/	200	1000
240	160	80	/	/	200	1500
285	160	125	/	/	200	1500
330	250	80	/	/	200	1500
375	250	125	/	/	200	1500
320	160	160	/	/	200	2000
410	250	160	/	/	200	2000
500	250	250	/	/	200	2000
400	160	160	80	/	200	2500
445	160	160	125	/	200	2500
490	250	160	80	/	200	2500
535	250	160	125	/	300	2500
580	250	250	80	/	300	2500
625	250	250	125	/	300	2500
480	160	160	160	/	300	3000
570	250	160	160	/	300	3000
660	250	250	160	/	300	3000
750	250	250	250	/	300	3000
560	160	160	160	80	300	3500
605	160	160	160	125	300	3500
650	250	160	160	80	300	3500
695	250	160	160	125	300	3500
740	250	250	160	80	300	3500
785	250	250	160	125	300	3500
830	250	250	250	80	300	3500
875	250	250	250	125	300	3500
640	160	160	160	160	300	4000
730	250	160	160	160	300	4000
820	250	250	160	160	300	4000
910	250	250	250	160	300	4000
1000	250	250	250	250	300	4000

Opposed configurations

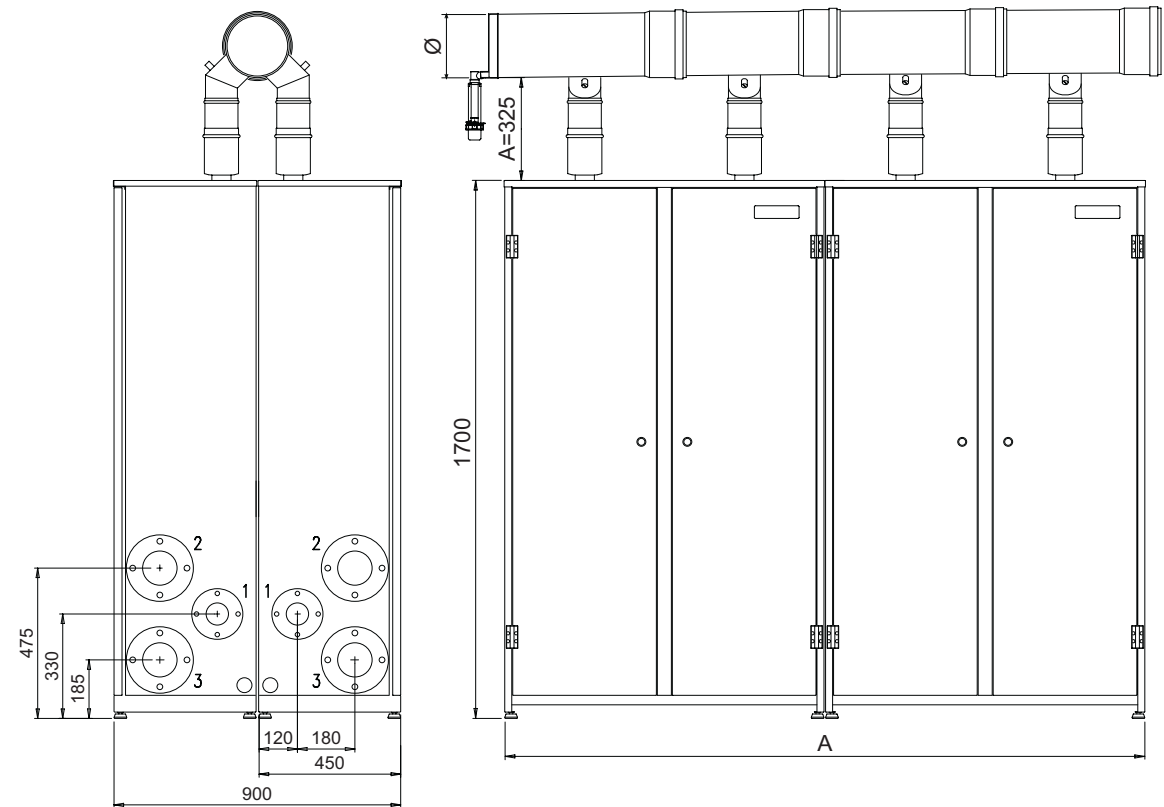


fig. 16 - Opposed configurations

Table. 3 - Opposed configurations

Total power	Combinations					
kW	Module 1	Module 2	Module 3	Module 4	Ø	A
160	80	80	/	/	200	1000
205	125	80	/	/	200	1000
250	125	125	/	/	200	1000
320	160	160	/	/	200	2000
410	250	160	/	/	200	2000
500	250	250	/	/	200	2000
400	160	160	80	/	200	2500
445	160	160	125	/	200	2500
490	250	160	80	/	200	2500
535	250	160	125	/	300	2500
580	250	250	80	/	300	2500
625	250	250	125	/	300	2500
640	160	160	160	160	300	4000
730	250	160	160	160	300	4000
820	250	250	160	160	300	4000
910	250	250	250	160	300	4000
1000	250	250	250	250	300	4000

2.2 Place of installation

The generator can be installed directly outside or in a special room with ventilation openings to the outside as prescribed by current regulations. If there are several burners or extraction units that can work together in the same room, the ventilation openings must be sized for simultaneous operation of all the units. The place of installation must be free of flammable objects or materials, corrosive gases, volatile substances or dusts. For positioning, leave enough space around the modules for normal maintenance operations. Make sure the front door opens without hindrances.



The air necessary for combustion enters through special openings in the bottom and top part of the appliance. Make sure these air passages are not obstructed in any way.

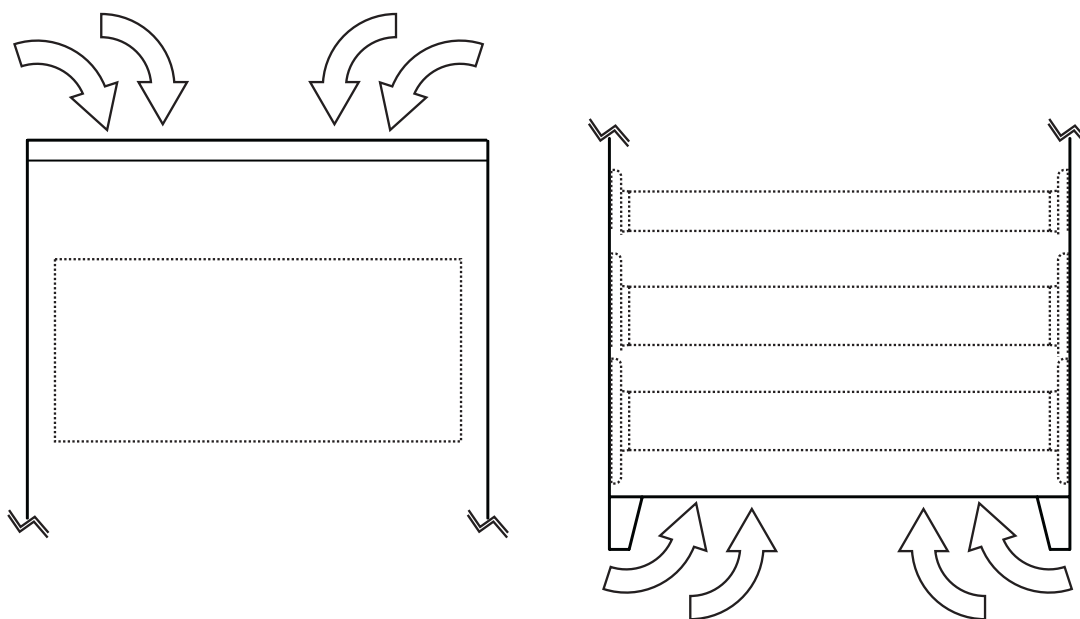


fig. 17 - Air inlet

2.3 Gas and water connections

Plumbing connections

Make the relevant connections according to the instructions given below. Make the generator connection in such a way that its internal pipes are free of stress. For proper operation and long life of the generator, the plumbing system must be of suitable size and complete with all the accessories that guarantee regular operation and running.

In particular, provide for all the protection and safety devices prescribed by current regulations for the complete modular generator. They must be installed on the hot water circuit delivery piping, immediately downstream of the last module, within a distance of 0.5 m, with no shut-off devices in between. A "Safety Device and Circuit Breaker module" equipped with internal hydraulic circuit breaker and safety units with ISPEL certification is available by request. Refer to the price-list or contact our sales network. The unit is not supplied with an expansion tank; its connection must therefore be made by the Installer.



A filter must also be installed on the system return piping to prevent impurities or sludge from the system clogging and damaging the heat generators.

The filter must necessarily be installed when replacing generators in existing systems. The manufacturer declines any liability for damage caused to the generator by failure to install or inadequate installation of this filter.

Water system characteristics

In the presence of water harder than 25° Fr, it is advisable to use suitably treated water, in order to avoid possible scaling in the boiler caused by hard water, or corrosion produced by aggressive water. Due to its low thermal conductivity, scaling even just a few mm thick causes significant overheating of the generator walls, with consequent serious problems.

Water treatment is indispensable in case of very large systems (containing large amounts of water) or with frequent introduction of replenishing water in the system. If partial or total emptying of the system becomes necessary in these cases, it is advisable to refill with treated water.

Gas connection

The gas must be connected to the corresponding union with a rigid metal pipe.

The gas meter must be adequate for the simultaneous use of all units connected to it. Carry out the generator gas connection in accordance with current regulations. The diameter of the gas pipe leaving the generator does not determine the diameter of the pipe between the unit and the meter; it must be chosen according to its length and pressure loss.



Make sure to install a fuel shutoff valve externally with respect to the modules, enabling the gas to be turned off even without opening the single modules equipped with key closing.

Connection instructions

ENERGY TOP B is equipped inside with 3 manifolds (gas, system delivery and return) and a condensate drain pipe that facilitate cascade connection and also connection of a single module to the system. The manifolds are sized for a connection in series of up to 1000 kW.

The cabinet contains a set of 3 seals (2 for water manifolds, 1 for gas manifold) with respective bolts and nuts, to be used for connection to the next module (connection in cascade). The optional kit code 042027X0 containing 3 blind flanges and 3 drilled flanges with respective seals and screws, is available for the connection to the system.

To connect a single module

- After establishing on which side of the module to make the water and gas connections, connect the flanges with the joining section contained in the kit on that side after suitably welding them to the system pipes. Make sure to correctly fit the special seals contained in the kit.
- Connect a Ø40 pipe to the condensate drain pipe for removing the condensate produced during operation (see fig. 37)
- Fit the blind flanges contained in the kit on the opposite side of the module, placing the special seals in between.

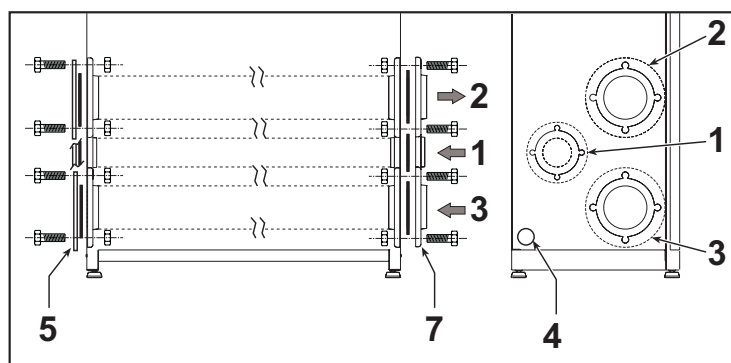


fig. 18

- 1 Gas inlet
- 2 System delivery
- 3 System return
- 4 Condensate drain
- 5 Blind flanges - kit 042027X0 (optional)
- 7 Flanges with joining section - kit 042027X0 (optional)

To connect several modules in line - fig. 19

- Connect the first module to the system and gas pipes, as described above, but without fitting the blind flanges on the opposite side of the module to that of the connection.
- Connect the second module on this side, making sure to align the connection flanges and the condensate drain pipe. Place the seals contained in the kit between the flanges of the two modules.
- Fit the bolts contained in the kit on the flanges from inside the first module, making them come out of the flanges in the second module. Partially tighten the nuts on the bolts from inside the second module.
- Before tightening the nuts, make sure all the seals are correctly positioned and fit the condensate drain pipes of the two modules (see fig. 38).
- Tighten the nuts and repeat the connection operations for the following modules.

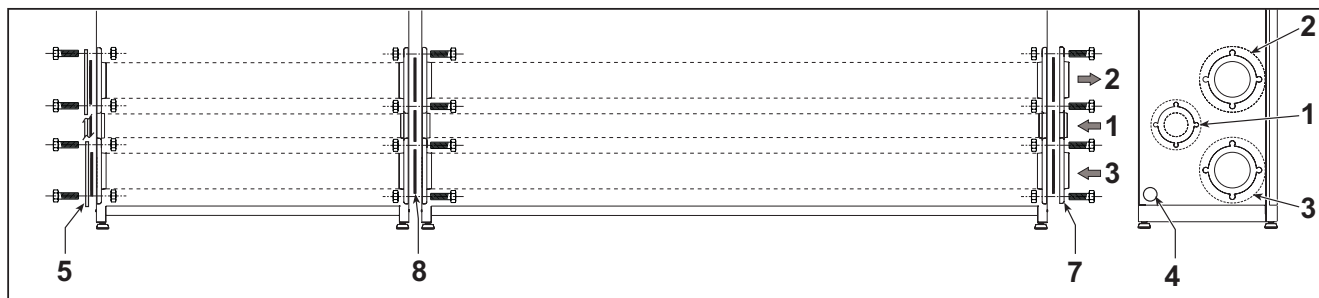


fig. 19

- 1 Gas inlet
- 2 System delivery
- 3 System return
- 4 Condensate drain
- 5 Blind flanges - kit 042027X0 (optional)
- 7 Flanges with joining section - kit 042027X0 (optional)
- 8 Seals (standard)

To connect several opposed modules

Optional kit code 042026X0 is available for connection of water and gas manifolds in series. The kit contains 3 blind flanges, 3 flanges with joining section, 3 flanged "U" pipes with respective seals and screws.

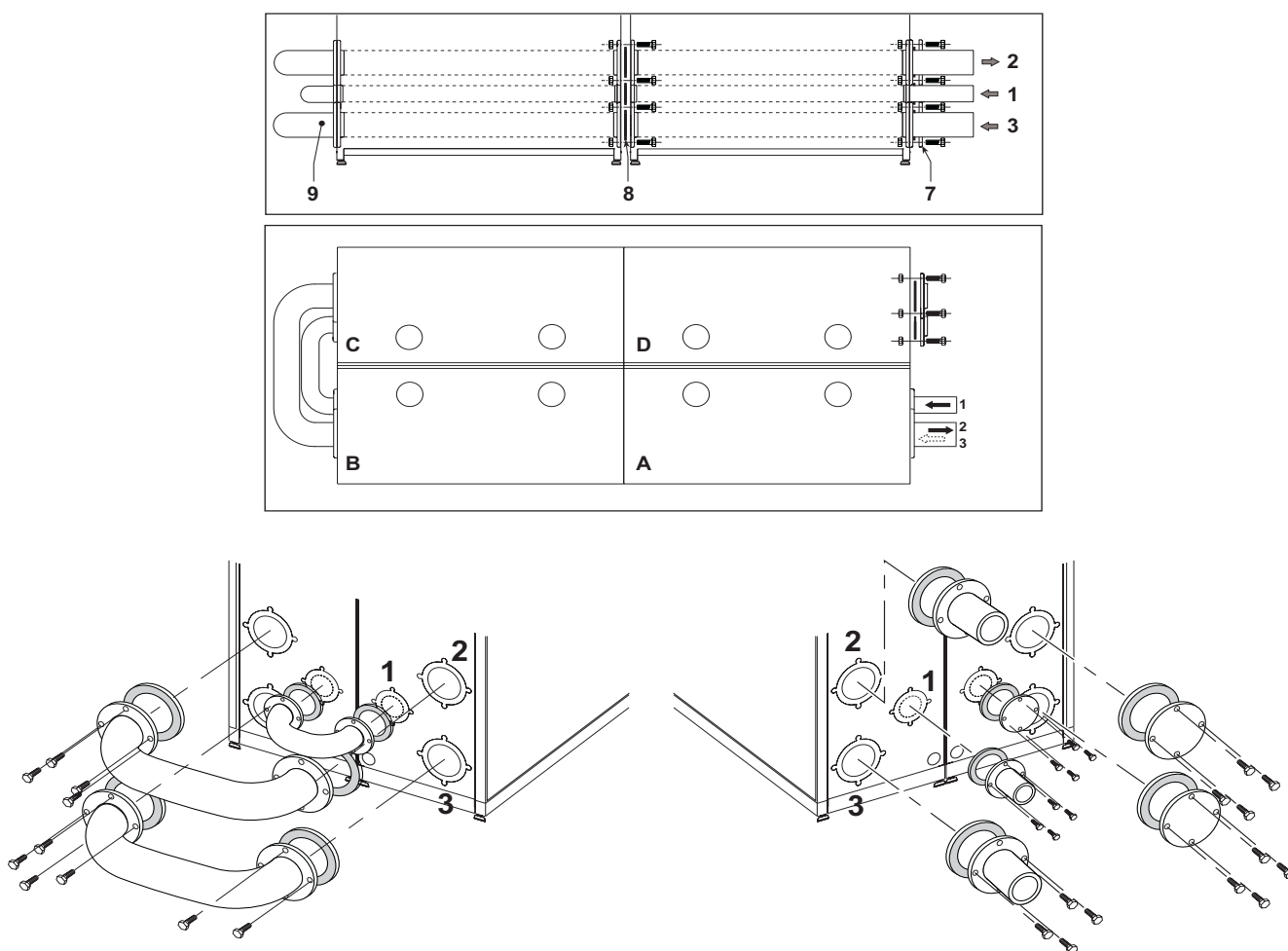


fig. 20 - Kit for connection of opposed modules

- | | | | |
|----------|-----------------|----------|------------------------------|
| A | 1st Module | 3 | System return |
| B | 2nd Module | 4 | Condensate drain |
| C | 3rd Module | 5 | Blind flanges - kit 042026X0 |
| D | 4th Module | 7 | Flanges with joining section |
| 1 | Gas inlet | 8 | Seals |
| 2 | System delivery | | |

- Arrange the modules according to the layout of fig. 20.
- Connect the first module to the system and gas pipes using the flanges with pipe section and respective seals contained in the kit.
- Connect the second module, making sure to align the connection flanges and the condensate drain pipe. Place the seals contained in the kit between the flanges of the two modules.
- Fit the bolts contained in the kit on the flanges from inside the first module, making them come out of the flanges in the second module. Partially tighten the nuts on the bolts from inside the second module.
- Before tightening the nuts, make sure all the seals are correctly positioned and fit the condensate drain pipes of the two modules (see fig. 38).
- Tighten the nuts and repeat the connection operations for the "U" pipes and following modules. Fit the blind flanges on the last module.

Safety device and separator module (optional)

The **Safety Device and Separator Module** for series **ENERGY TOP B** modular generators is an ISPESE certified module containing a hydraulic separator and safety, protection and control devices required by file "R" section R3A and R3B, intended for use with series ENERGY TOP B modular generators.

Every **ISPESE** Safety Device Module comprises a cabinet of the same size and appearance as the modular generators **ENERGY TOP B**, containing a hydraulic separator with air valve and thermal insulation, the respective system delivery and return manifolds, a gas manifold, and a discharge manifold for the safety valve. The safety devices required by file "R" section R3A and R3B are fitted on the hydraulic manifolds and hydraulic separator body. Provision is also made for the probe pocket of a possible fuel shut-off valve, to be installed in the system, on the outside of the bank of modules.

The **hydraulic separator** contained in the module allows the hydraulic circuit of the modules **ENERGY TOP B** (primary circuit) to be made independent of the hydraulic circuit of the respective heating system (secondary circuit). The separator is sized for correct operation up to 1000 kW, and the main advantages offered are:

- An external circulating pump for the primary circuit is not necessary. In fact, circulation in the primary circuit is ensured by the circulating pumps contained inside the generators **ENERGY TOP B**.
- When the secondary pump is deactivated, also the circulation in the system circuit stops; the entire flow delivered by the circulating pumps contained inside the generators **ENERGY TOP B** is by-passed through the hydraulic separator.
- The flow in the primary circuit can remain constant, whereas the secondary circuit can function with a variable or intermittent flow rate.
- There are no anomalous operating conditions in which the system pumps interact with the circulating pumps inside the generators **ENERGY TOP B**, creating unwanted head and flow rate variations in the circuits.
- Sizing of the system circulating pump can be carried out according to the needs of just the secondary circuit.

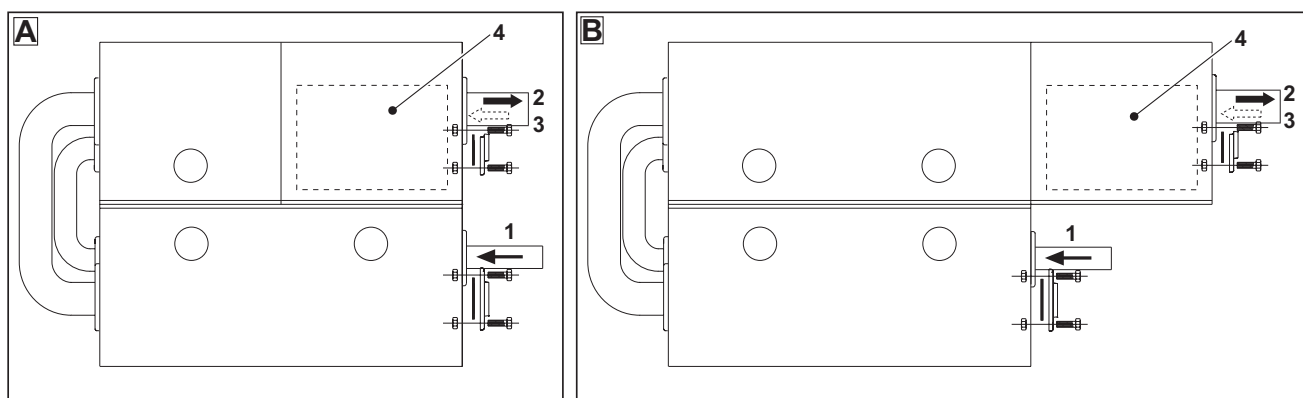


fig. 21 - Opposed configurations

- A** 1st Module
- B** 2nd Module
- 1** Gas inlet
- 2** System delivery
- 3** System return
- 4** Hydraulic separator

The safety device and separator module must be installed directly next to the last module **ENERGY TOP B** making up the modular generator. The particular symmetrical shape of the module allows it to be installed on the right side and left side of the generator bank. Some possible connection examples are given below.

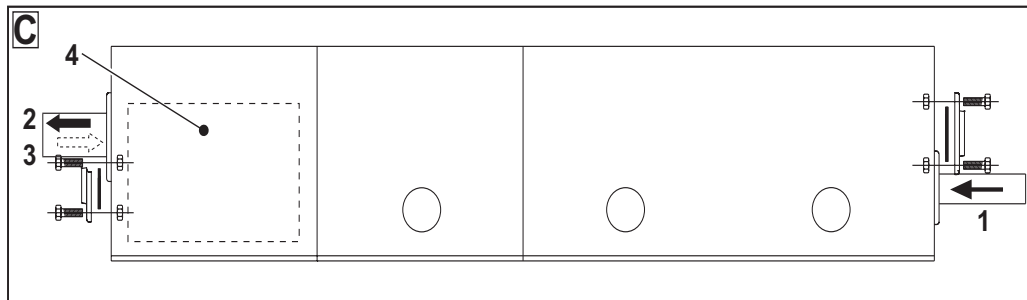


fig. 22 - Configuration in line

- C** 3rd Module
- 1** Gas inlet
- 2** System delivery

- 3** System return
- 4** Hydraulic separator

Plumbing circuit examples

Key of examples

- | | |
|--|--|
| I ISPEL safety devices | 139 Remote control (not supplied) |
| D Hydraulic separator | 298 Cascade temperature sensor (not supplied) |
| 42 DHW temperature sensor (not supplied) | 306 Heating system circulating pump (not supplied) |
| 72 Room thermostat (not supplied) | 307 Heating system second circulating pump (not supplied) |
| 72b Room thermostat (not supplied) | SM Delivery probe (supplied with kit FZ4) |
| 95 3-way valve - with spring return: at rest on DHW side (not supplied) | TS Safety thermostat (not supplied) |
| 130 Hot water tank circulating pump (not supplied) | PZ Zone pump (not supplied) |
| 138 External probe (not supplied) | FZ4 Zone regulator |

Parameters

Each system requires a different parametrisation. Follow the procedure for accessing the two menus, given below; for the parameters to be modified, refer to the tables given alongside the plumbing diagrams.

"Service Menu"

Press the Reset button for 10 seconds to access the card Service Menu.

Press the Heating buttons to select "tS", "In", "Hi" or "rE". "tS" means Transparent Parameters Menu, "In" Information Menu, "Hi" History Menu, and "rE" History Menu Reset. Select "tS" and press the RESET button.

The card has 29 transparent parameters also modifiable from Remote Control (Service Menu).

Press the Heating buttons to scroll the list of parameters in increasing or decreasing order. Press the DHW buttons to modify the value of a parameter: the change will be automatically saved.

Press the Reset button to return to the Service Menu. Press the Reset button for 10 seconds to exit to the card Service Menu.

"System Type Menu"

Press the Summer/Winter button for 10 seconds to access the card System Type Menu.

The card has 21 transparent parameters.

Press the Heating buttons to scroll the list of parameters in increasing or decreasing order. Press the DHW buttons to modify the value of a parameter: the change will be automatically saved.

Press the Summer/Winter button for 10 seconds to exit the card System Type Menu.



One direct heating circuit

Check/Change parameter P02 of the "Transparent Parameters Menu" to **1** for **ENERGY TOP B 80 - 160** and **4** for **ENERGY TOP B 125 - 250**.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

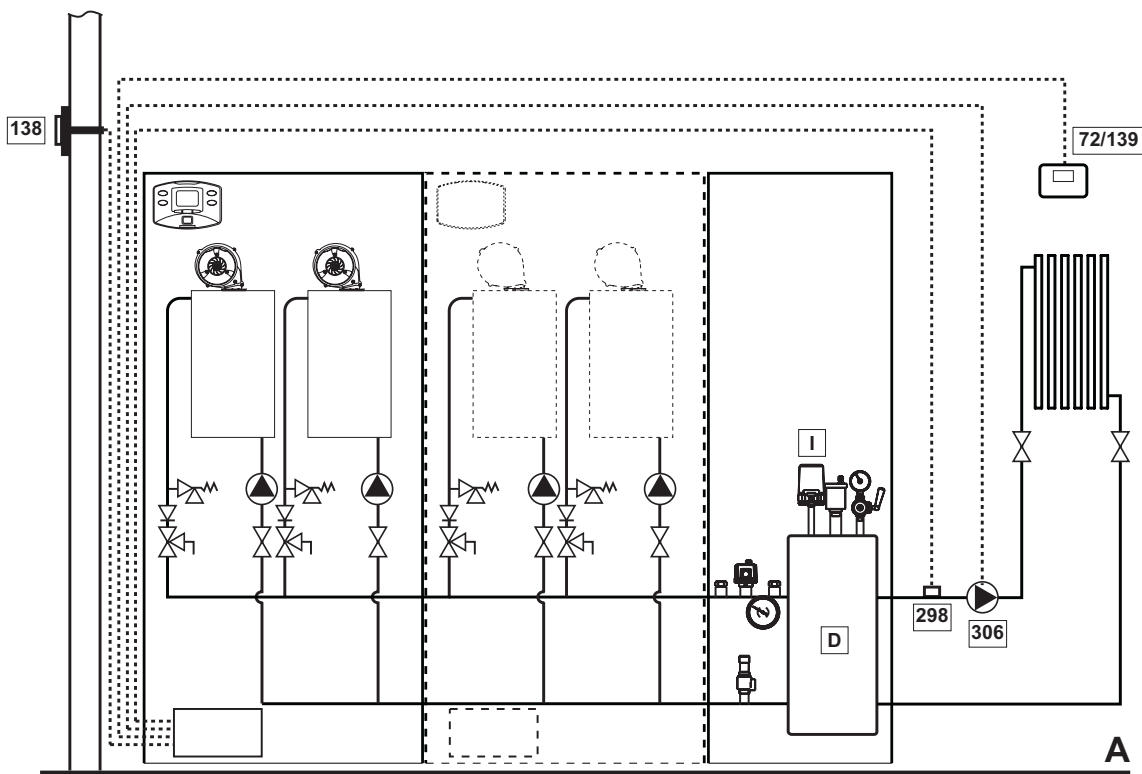


fig. 23

One direct heating circuit and one DHW circuit with pump

Check/Change parameter P02 of the "Transparent Parameters Menu" to **2** for **ENERGY TOP B 80 - 160** and **5** for **ENERGY TOP B 125 - 250**.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

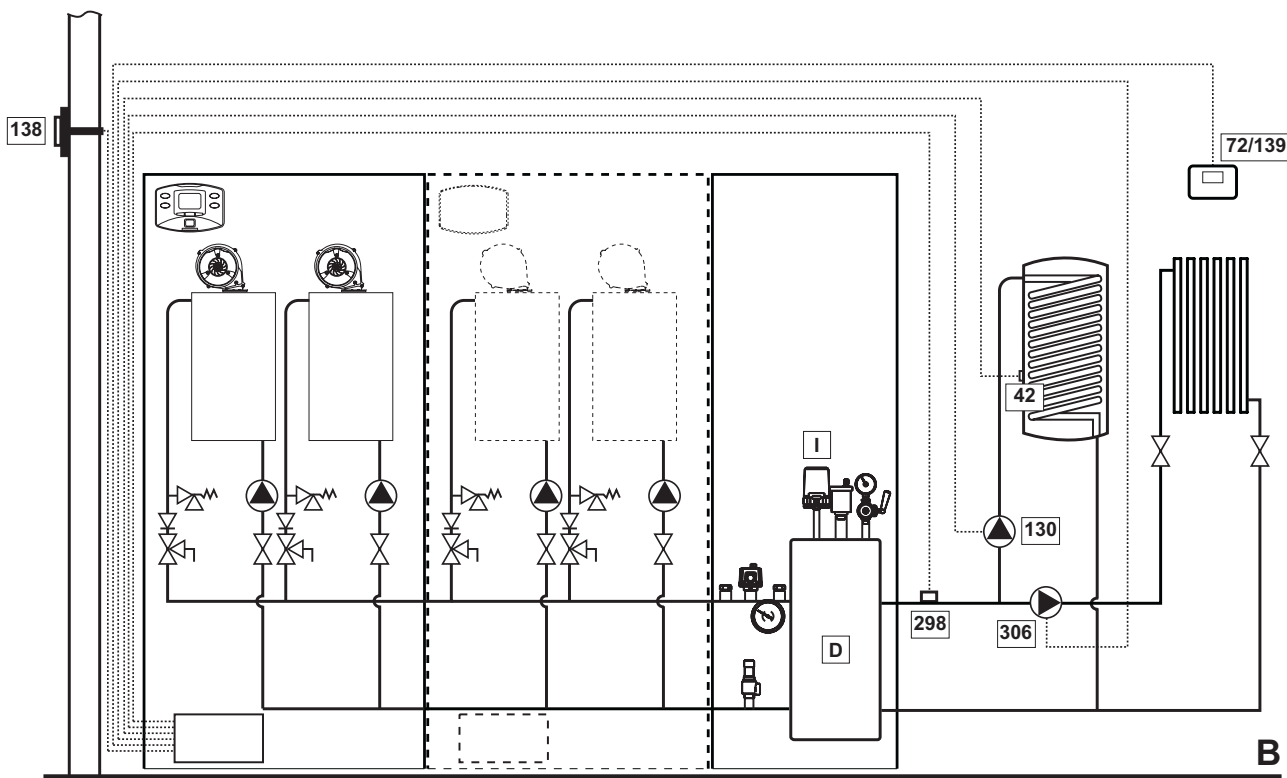


fig. 24

One direct heating circuit and one DHW circuit with diverter valve

Check/Change parameter P02 of the "Transparent Parameters Menu" to **3** for **ENERGY TOP B 80 - 160** and **6** for **ENERGY TOP B 125 - 250**.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

Change parameter P.11 of the "System Type Menu" to 1.

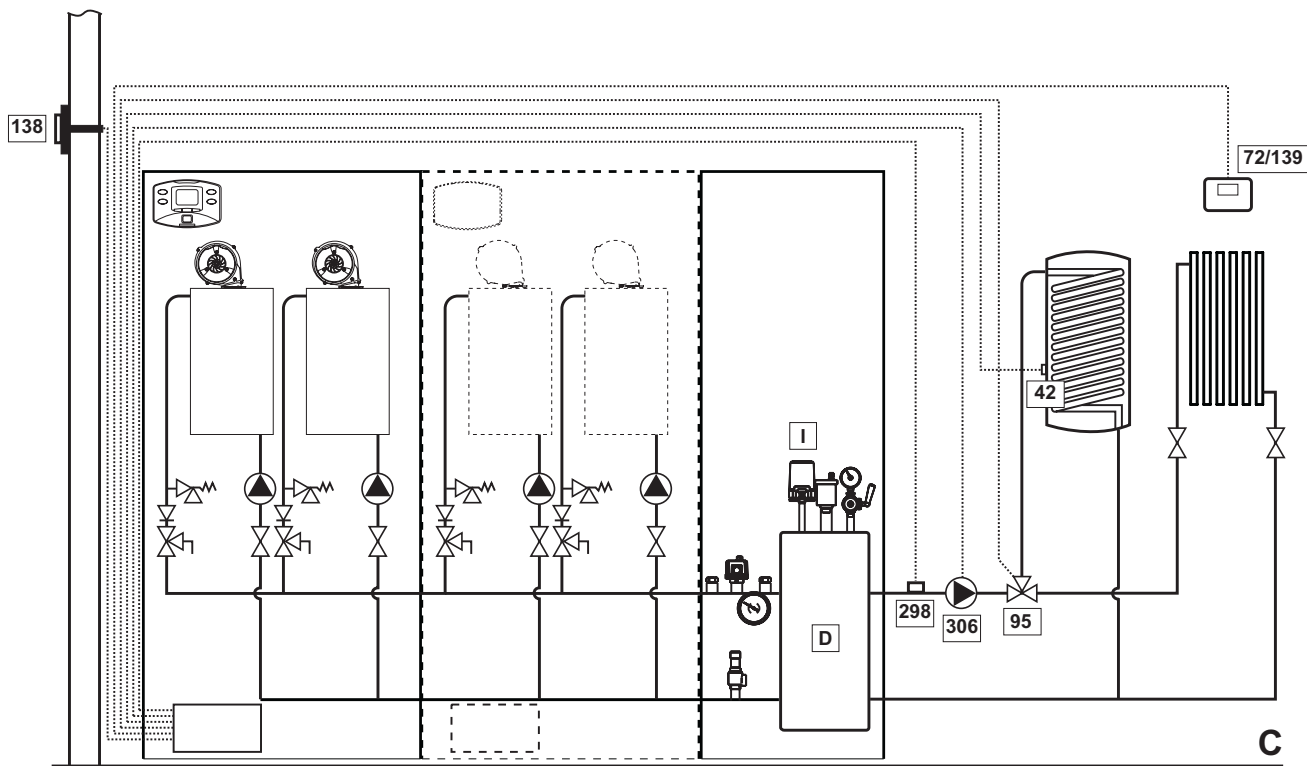


fig. 25

Two direct heating circuits

Check/Change parameter P02 of the "Transparent Parameters Menu" to **1** for **ENERGY TOP B 80 - 160** and **4** for **ENERGY TOP B 125 - 250**.

Change parameter P.01 of the "System Type Menu" to 4.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

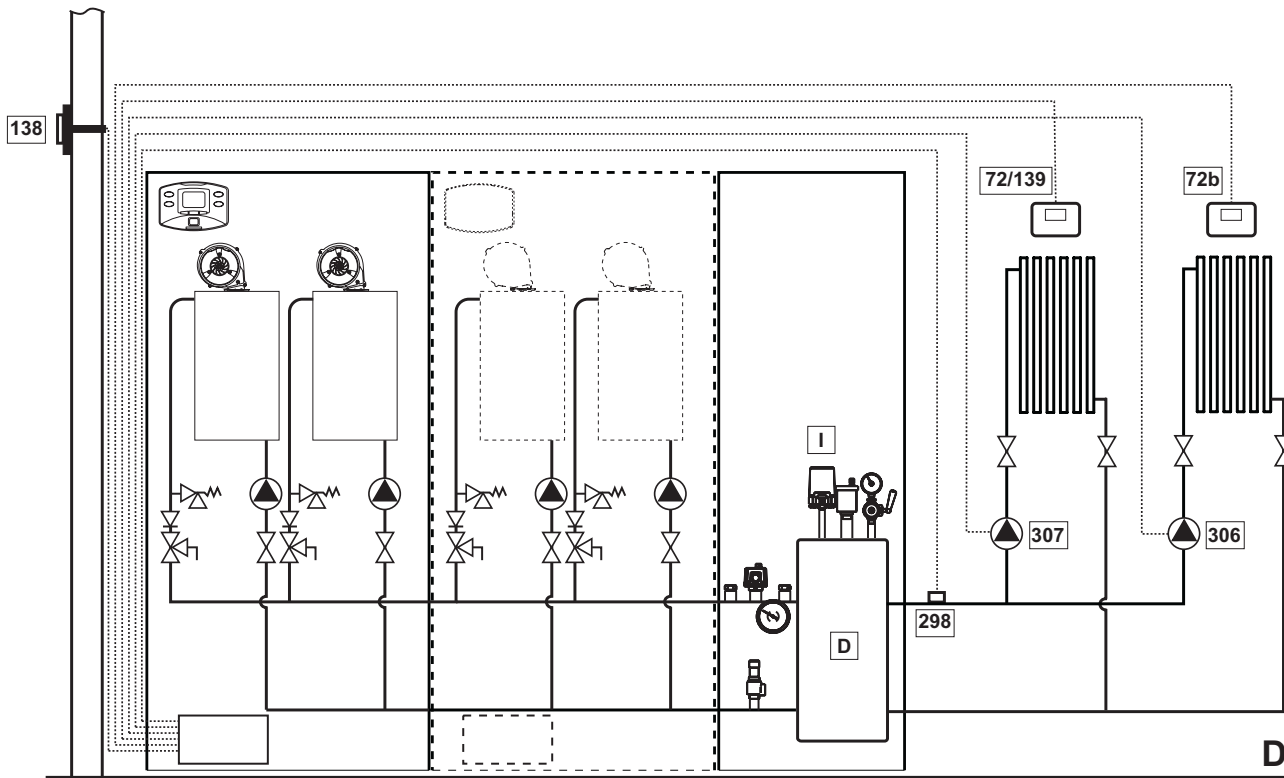


fig. 26

Two mixed heating circuits and one direct heating circuit

Check/Change parameter P02 of the "Transparent Parameters Menu" to **1** for **ENERGY TOP B 80 - 160** and **4** for **ENERGY TOP B 125 - 250**.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

For the electrical connection and the zone system settings, refer to the "FZ4 zone regulator" handbook

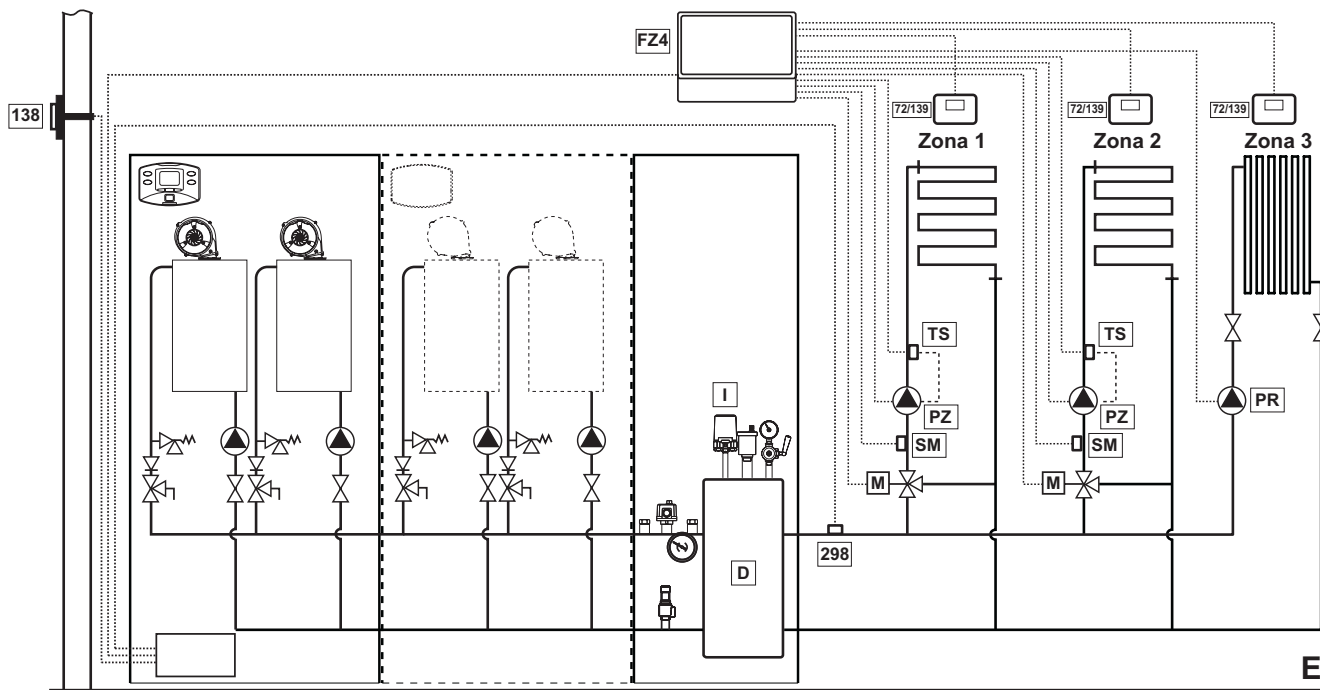


fig. 27

Two mixed heating circuits, one direct heating circuit and one DHW circuit with pump

Check/Change parameter P02 of the "Transparent Parameters Menu" to **2** for **ENERGY TOP B 80 - 160** and **5** for **ENERGY TOP B 125 - 250**.

Change parameter P.02 of the "System Type Menu" to 1.

Change parameter P.09 of the "System Type Menu" to 1.

For the electrical connection and the zone system settings, refer to the "FZ4 zone regulator" handbook

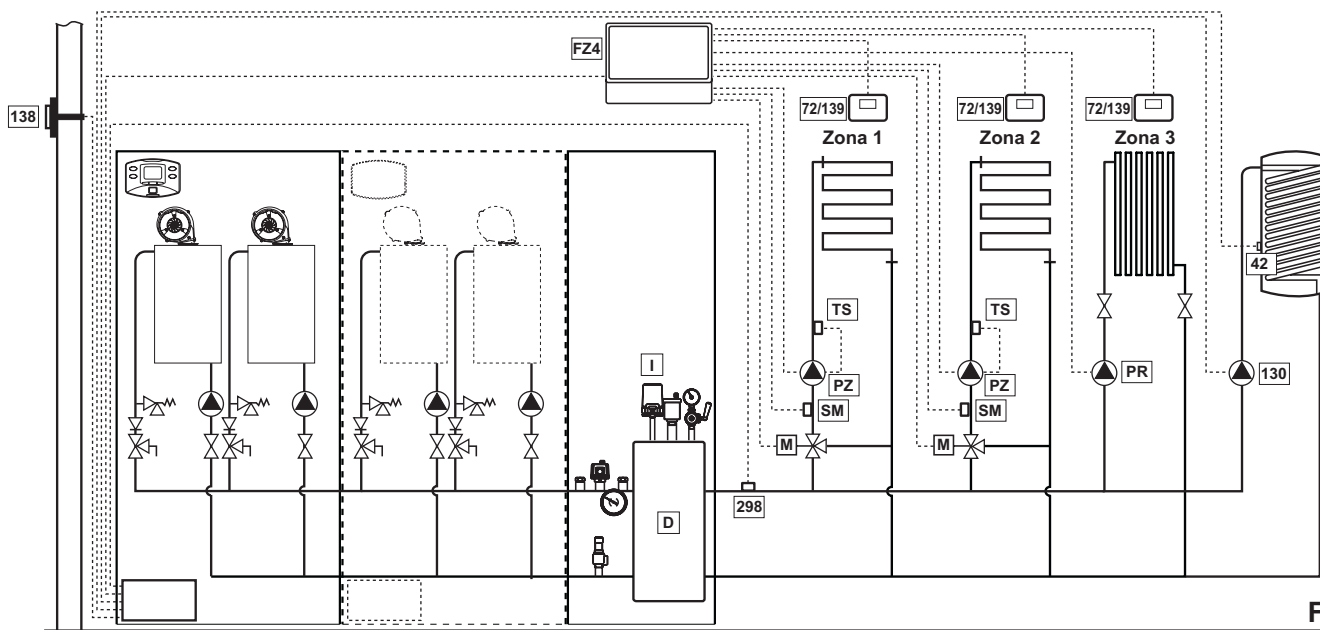


fig. 28

2.4 Electrical connections

Connection to the electrical grid



The unit's electrical safety is only guaranteed when correctly connected to an efficient earthing system executed according to current safety standards. Have the efficiency and suitability of the earthing system checked by professionally qualified personnel. The manufacturer is not responsible for any damage caused by failure to earth the system. Also make sure that the electrical system is adequate for the maximum power absorbed by the unit, as specified on the boiler dataplate.

The boiler is prewired and provided with a Y-cable and plug for connection to the electricity line. The connections to the grid must be made with a permanent connection and equipped with a bipolar switch whose contacts have a minimum opening of at least 3 mm, interposing fuses of max. 3A between the boiler and the line. It is important to respect the polarities (LINE: brown wire / NEUTRAL: blue wire / EARTH: yellow-green wire) in making connections to the electrical line. During installation or when changing the power cable, the earth wire must be left 2 cm longer than the others.



The user must never change the unit's power cable. If the cable gets damaged, switch off the unit and have it changed solely by professionally qualified personnel. If changing the electric power cable, use solely "HAR H05 VV-F" 3x0.75 mm² cable with a maximum outside diameter of 8 mm.

Room thermostat (optional)



CAUTION: The room thermostat must have clean contacts. CONNECTING 230 V. TO THE TERMINALS OF THE ROOM THERMOSTAT WILL IRREPARABLY DAMAGE THE ELECTRONIC CARD.

When connecting a remote timer control or a timer switch, do not take the power supply for these devices from their cut-out contacts. Their power supply must be taken with a direct connection from the mains or with batteries, depending on the kind of device.

External probe (optional)

Connect the probe to its respective terminals. The maximum permissible length for the boiler - external probe connection electrical cable is 50 m. A normal 2-wire cable can be used. The external probe should preferably be installed on the North, North-West wall or that facing the largest area of living room. The probe must never be exposed to the early morning sun or, insofar as possible, direct sunlight; protect it if necessary. In any case, the probe must not be installed near windows, doors, ventilation openings, flues or heat sources that could affect the reading.

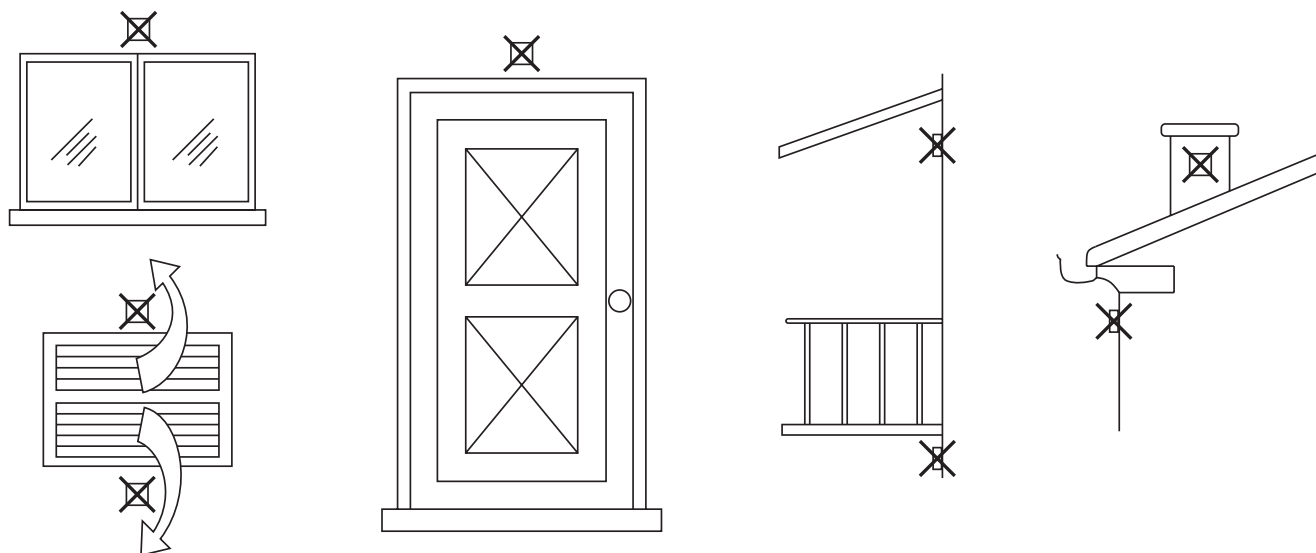


fig. 29 - External probe positioning not recommended

Accessing the electrical terminal block

The electrical terminal block is located inside a sealed box at the bottom left of the cabinet. Make the electrical connections as shown in the wiring diagram on sec. 49 and run the cables through the special cable glands.

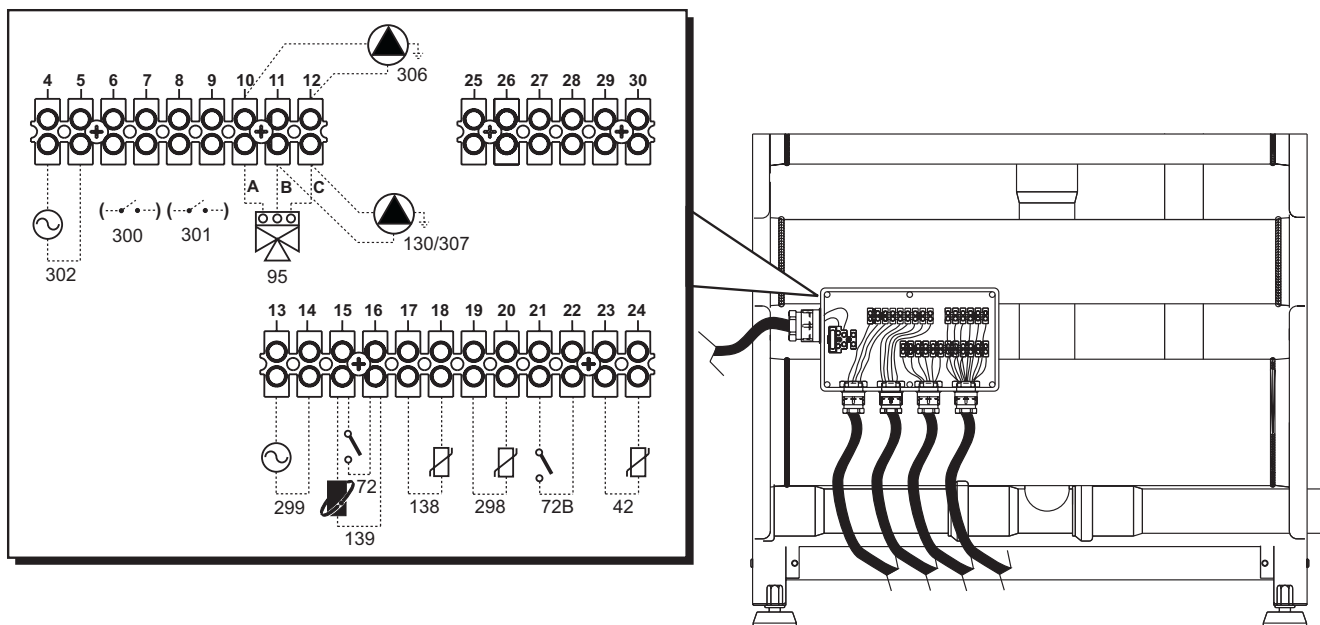


fig. 30 - Electrical terminal block

- 42 DHW temperature sensor (not supplied)
- 72 Room thermostat (not supplied)
- 72b Room thermostat (not supplied)
- 95 Diverter valve (not supplied)
- A = Heating phase
- B = DHW phase
- C = Neutral
- NOTE:** For valves with 2 wires and spring return, use the connections B and C
- 130 DHW circulating pump (not supplied)
- 138 External probe (not supplied)
- 139 Remote timer control (not supplied)
- 298 Cascade temperature sensor (not supplied)
- 299 Input 0-10 Vdc
- 300 Burner lit contact (voltage-free contact)
- 301 Fault contact (voltage-free contact)
- 302 Remote reset input (230 Volt)
- 306 Heating system circulating pump (not supplied)
- 307 Heating system second circulating pump (not supplied)

For the connection in cascade

1. Connect the modules as shown in fig. 31

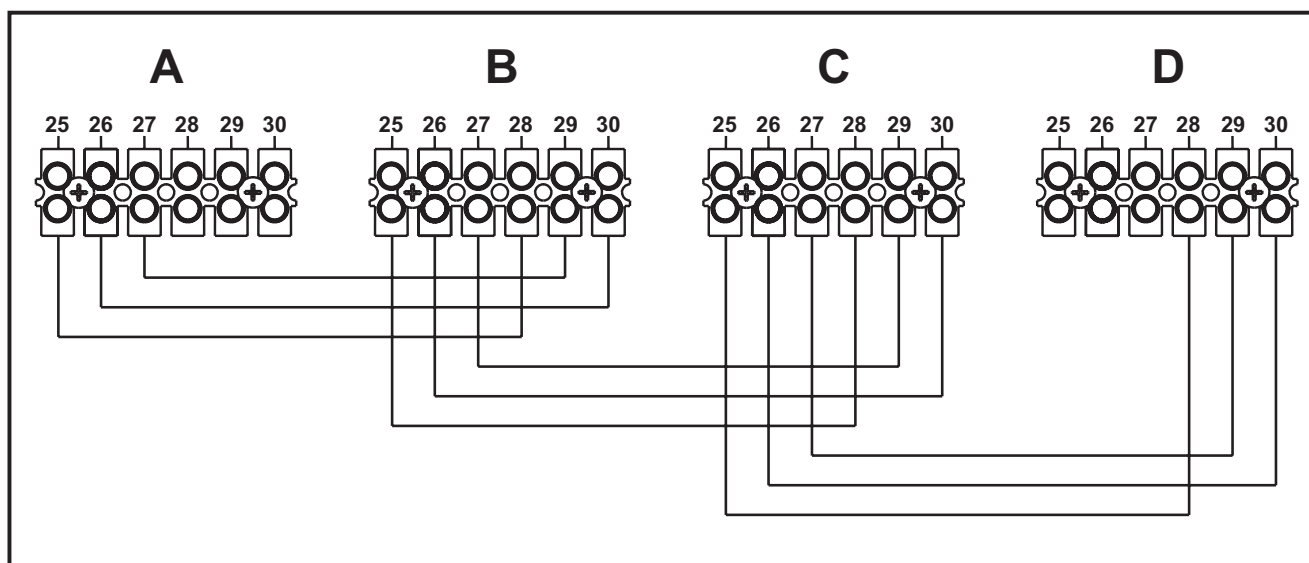


fig. 31 - Connection in cascade

A 1st Module
B 2nd Module

C 3rd Module
D 4th Module

2. Carry out all the electrical connections (terminals 4 to 24) on module no. 1
3. On the remaining modules only connect the power supply and possible contacts for: burner lit (300), fault contact (301) and remote reset input (302).
4. Switch on the power to the entire cascade
5. After the "FH" procedure, check correct operation of the cascade:
 - Module 1: arrow symbol at top left of the display
 - Module 2: arrow symbol at bottom right of the display
 - Module 3: arrow symbol at bottom right of the display
 - Module 4: arrow symbol at top right of the display

If this does not occur, disconnect the power and check the wiring in fig. 31.

Settings

All adjustments must be made on module no. 1.

Possible faults

If the electrical connection of a module is disconnected for some reason, module 1 will activate fault F70.

If the electrical connection of a module is disconnected for some reason, the next module will activate fault F71.

2.5 Flue connection

Important

The unit is a B23 type with combustion air drawn from the installation room and fume exhaust by means of a fan (operation with flue under pressure) and must be connected to one of the discharge systems indicated below. Before proceeding with installation, check and carefully comply with the local regulations and provisions. Also comply with the provisions concerning the positioning of wall and/or roof terminals and the minimum distances from windows, walls, ventilation openings, etc.

Manifold, ducts and flue must be suitably sized, designed and made in compliance with the current standards. They must be made of suitable materials, i.e. resistant to heat and corrosion, smooth on the inside and hermetic. In particular, joints must be condensate-proof. Also provide for suitable condensate drainage points, connected through a trap to prevent the condensate produced in the flues from running into the generators.



The unit is equipped with one (models **ENERGY TOP B 80 - 125**) or two (models **ENERGY TOP B 160 - 250**) separate Ø80 flue connections for the two burner - exchanger units.

The combustion circuits of the two units are completely independent. When joining the two fume outlets to a single flue or manifold (in case of a single module or connection in cascade) it is necessary to install a fume anti-backflow valve on **each outlet** to prevent operation anomalies or the creation of hazardous conditions. Make sure to use the optional FERROLI kits, provided with special anti-backflow valves.



Before carrying out the flue connection, make sure to fill the condensate trap with approx. 0.5 litres of water through the flue connections.

Connection with separate pipes

Separate Ø80 ducts can be connected directly to the unit. Insert the seal 1KWMA84A on the Ø80 pipes leaving the unit and make it adhere to the upper wall of the cabinet.

Before proceeding with installation, make sure the maximum permissible length has not been exceeded, by means of a simple calculation:

1. Establish the layout of the system of split flues, including accessories and outlet terminals for each of the two burner/exchanger bodies.
2. Consult the table 5 and identify the losses in m_{eq} (equivalent metres) of every component, according to the installation position.
3. Check that the sum total of losses is less than or equal to the maximum permissible length in table 4.

Table. 4 - Max. length separate ducts

	Separate ducts
	For each single Exchanger/Burner Body
Max. permissible length	20 m_{eq}

Table. 5 - Accessories

				Losses in m_{eq}	
				Fume exhaust	
				Vertical	Horizontal
Ø 80	PIPE	1 m M/F	1KWMA83W	1.6	2.0
	BEND	45° M/F	1KWMA65W	1.8	
		90° M/F	1KWMA01W	2.0	
	PIPE SECTION	with test point	1KWMA70W	0.3	
	TERMINAL	fumes, wall with antiwind	1KWMA86A	5.0	
	FLUE	Split air/fumes 80/80	1KWMA84U	5.0	

Direct connection of Ø80 terminals code 041013X0

Each single module can be connected directly to the terminal kits 041013X0, even with connection in bank, as given in fig. 32.

Each kit comprises a Ø80 terminal with grille (ref. 3), a seal (ref. 1) and a centering ring (not used in this model). For models **ENERGY TOP B 160 - 250** use 2 kits per module, and 1 kit for models **ENERGY TOP B 80 - 125**.

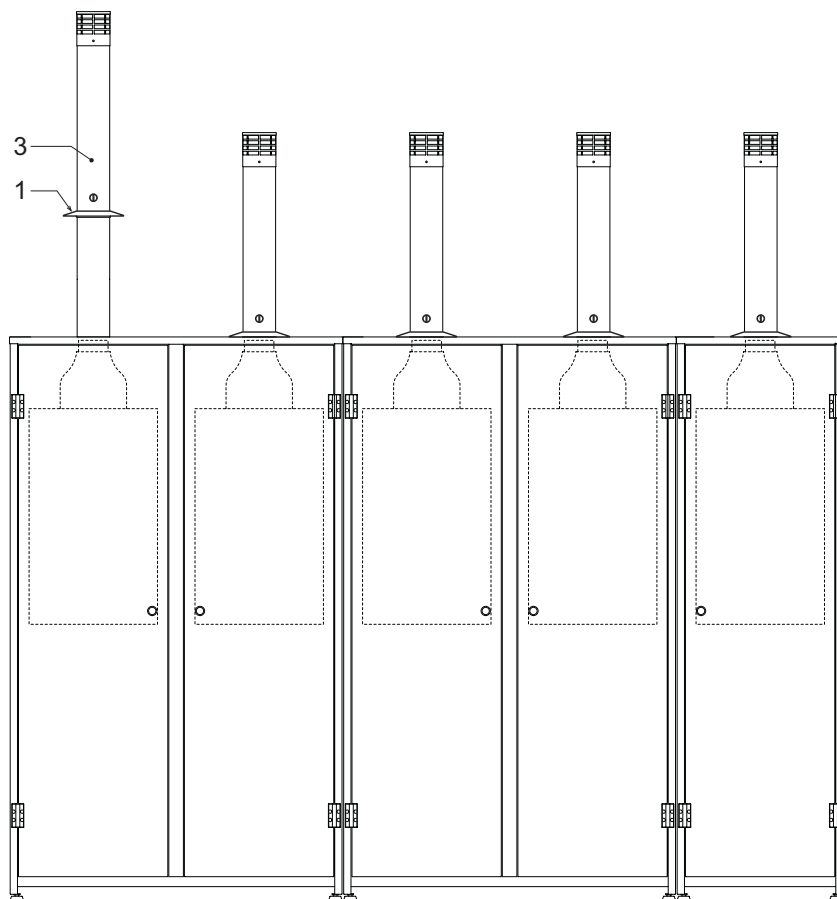


fig. 32



Before installing the flues, fill the trap with approx. 0.5 l of water through the flue connections.



For outside installations make the seal 1 adhere perfectly to top part of the cabinet to prevent infiltration of rain and atmospheric agents.

Connection with manifolds

To connect one or more modules in bank to a single flue, it is advisable to use the special manifolds (optionals) indicated in the table. The choice of diameter must be made according to the total power of the bank of units, respecting that given in the table. Use a starting kit for each bank (containing manifold plug and trap) and a suitable number of manifolds (one for each ENERGY TOP B 80 - 125 and two for each ENERGY TOP B 160 - 250).

90° bends and manifold extensions are also available for the flue connection.

Coil heating capacity	Manifold diameter		Starting kit	Manifold kit L=500	Manifold extension M/F L=1000	Manifold 90° bend
Up to 500 kW	200 mm	in line	041026X0	C 041028X0	041019X0	041016X0
		opposed		E 041030X0		
Up to 1000 kW	300 mm	in line	041027X0	D 041029X0	041036X0	041035X0
		opposed		F 041031X0		

Installation examples with modules in line

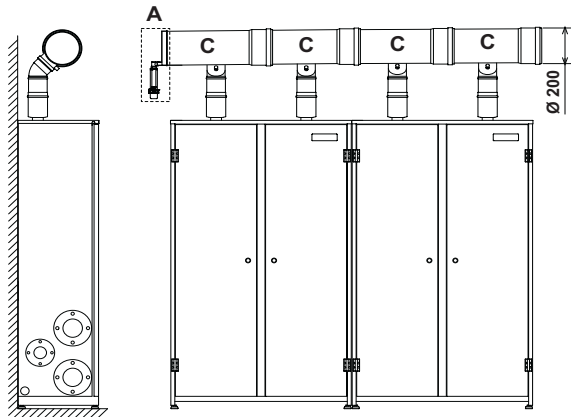


fig. 33

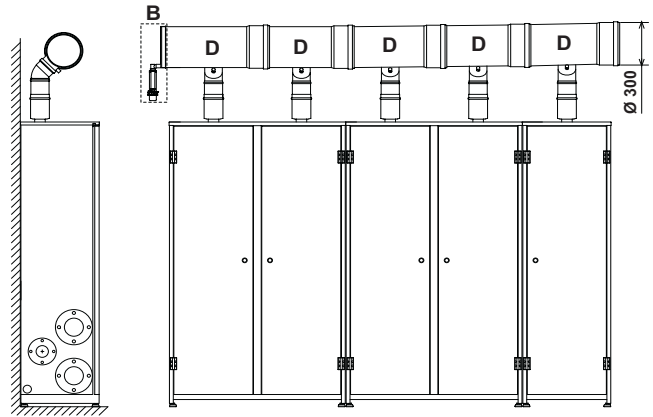


fig. 34

- A - 041026X0** - Starting kit Ø200
- B - 041027X0** - Starting kit Ø300
- C - 041028X0** - Manifold kit Ø200 in line
- D - 041029X0** - Manifold kit Ø300 in line

Installation examples with opposed modules

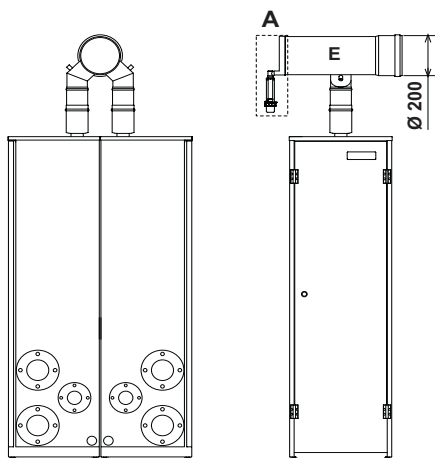


fig. 35

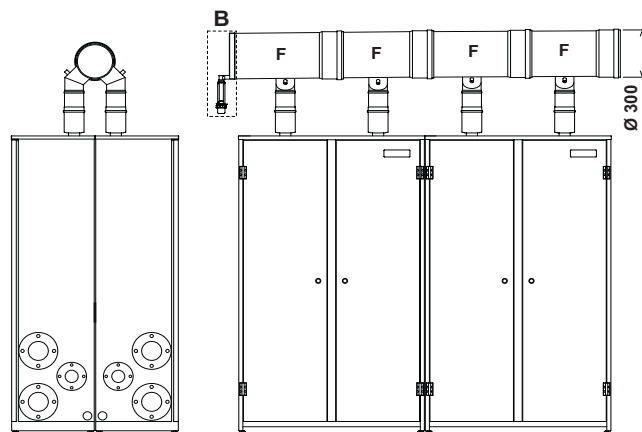


fig. 36

- A - 041026X0 - Starting kit Ø200
- B - 041027X0 - Starting kit Ø300
- E - 041030X0 - Manifold kit Ø200 opposed
- F - 041031X0 - Manifold kit Ø300 opposed

2.6 Condensate drain



The boiler has an internal condensate drain trap connected to an internal condensate outlet manifold.

Condensate drain connection using one generator

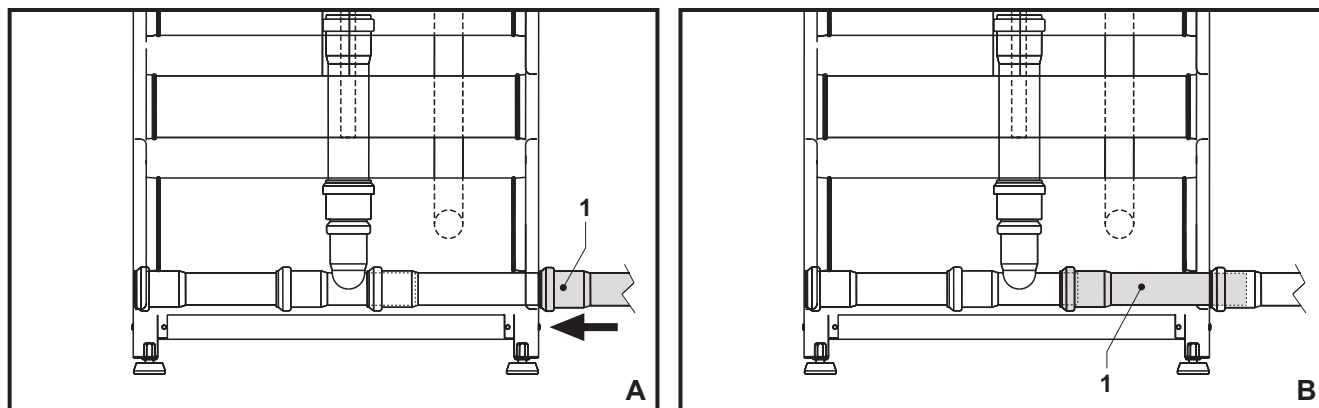


fig. 37 - Condensate drain connection with one generator

- A Place the Ø40 pipe 1 (not supplied) on the side of the generator.
- B Slide the pipe 2 towards the arrow side at least 2-3 cm in order to insert it in the pipe 1.

Condensate drain connection using two or more generators

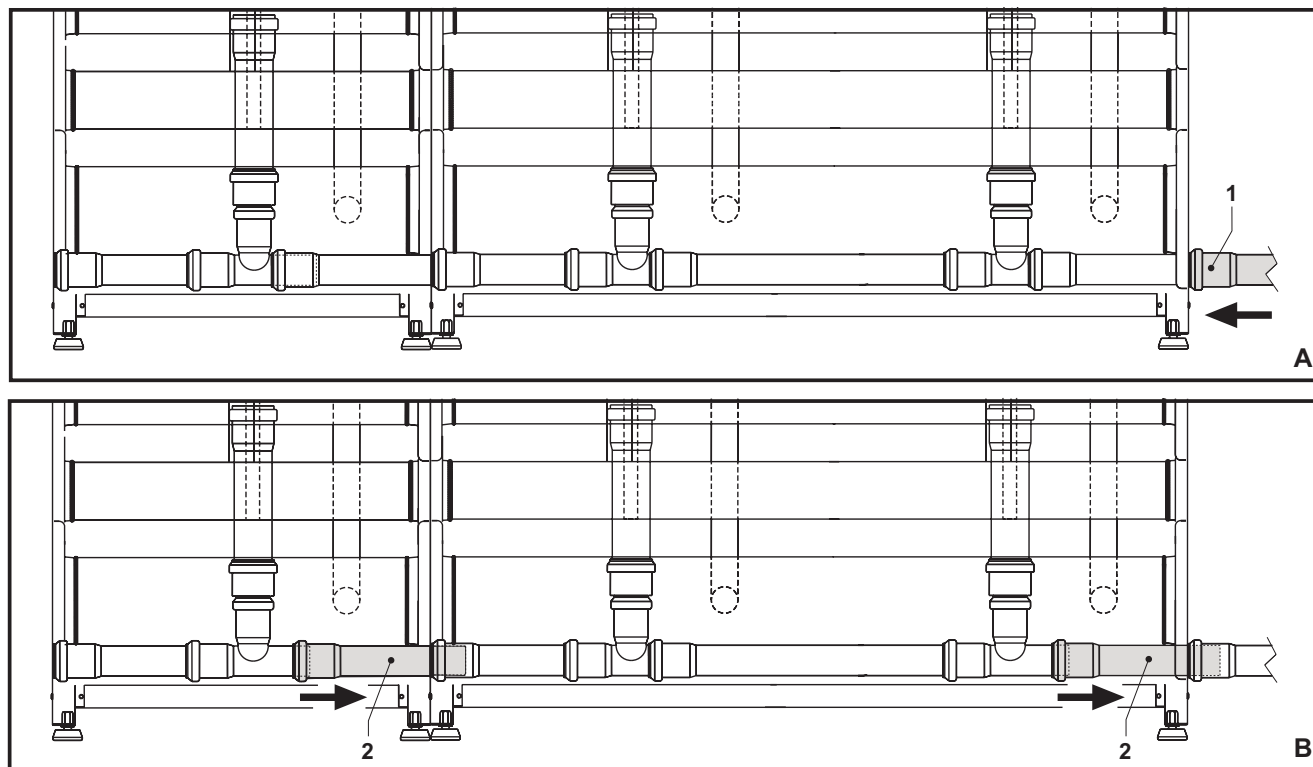


fig. 38 - Condensate drain connection with several generators

- A Place the Ø40 pipe 1 (not supplied) on the side of the generator.
- B Slide the pipe 2 (of each generator) towards the arrow side at least 2-3 cm in order to insert it in the pipe 1.

3. Service and maintenance

All adjustment, conversion, start-up and maintenance operations described below must only be carried out by Qualified Personnel (meeting the professional technical requirements prescribed by current regulations) such as those of the Local After-Sales Technical Service.

FERROLI declines any liability for damage and/or injury caused by unqualified and unauthorised persons tampering with the unit.

3.1 Adjustments

Gas supply conversion

The unit can operate on Natural Gas or LPG and is factory-set for use with one of these two gases, as clearly shown on the packing and on the dataplate. Whenever a different gas to that for which the unit is arranged has to be used, a conversion kit will be required, proceeding as follows:

1. Using the special key supplied, open the cabinet of the upper exchanger body.
2. Loosen the gas valve fixing ring "A".
3. Undo the three fixing screws "B" and remove the gas valve "C".
4. Replace the gas valve "D" positioning it inside the seal "E", with that contained in the conversion kit. Refit the parts and check the tightness.
5. Repeat steps 2, 3 and 4 for the lower exchanger body (model **ENERGY TOP B 160 - 250** only)
6. Modify the parameter on control system.
 - turn the boiler onto standby
 - press the DHW buttons (details 1 and 2 - fig. 1) for 10 seconds: the display shows "P01" flashing.
 - Press the DHW buttons fig. 1 (details 1 and 2 -) to set parameter **00** (for natural gas operation) or **01** (for LPG operation).
 - press the DHW buttons (details 1 and 2 - fig. 1) for 10 seconds.
 - the boiler will go back onto standby
7. Apply the label, contained in the conversion kit, near the dataplate.
8. Using a combustion analyser connected to the boiler fume outlet, make sure the CO₂ content in the fumes, with the boiler operating at max. and min. output, complies with that given in the technical data table for the corresponding type of gas.

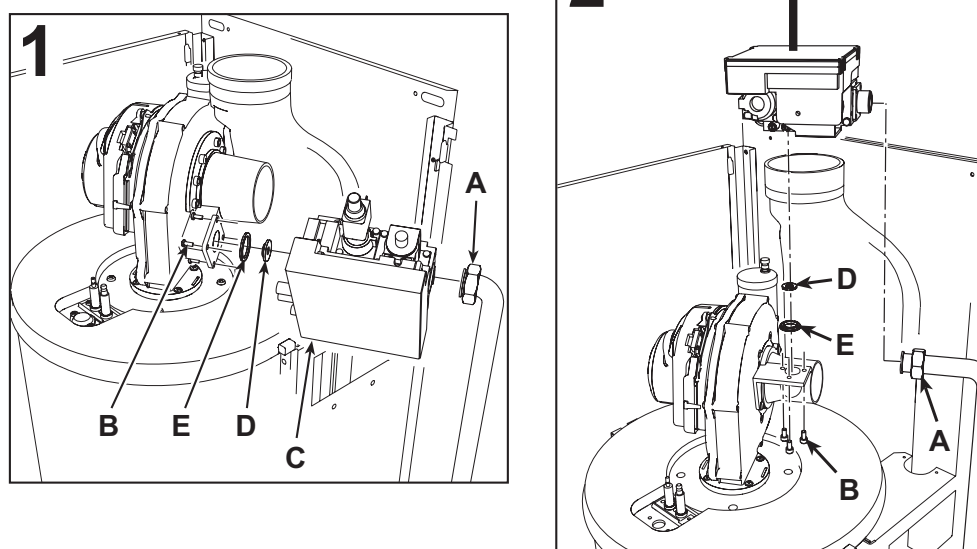


fig. 39 - Gas conversion

- 1 Model **ENERGY TOP B 125 - 250**
- 2 Model **ENERGY TOP B 80 - 160**

Activating TEST mode

Press the heating buttons (+) (-) (details 3 and 4 - fig. 1) at the same time for 5 seconds to activate **TEST** mode. The boiler lights at the maximum heating power set as described in the following section.

The heating symbol (detail 13 - fig. 1) and DHW symbol (detail 9 - fig. 1) flash on the display; the heating power will be displayed alongside.

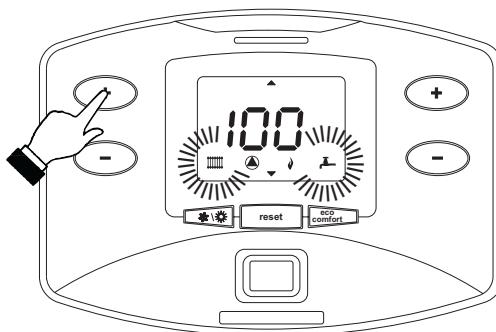


fig. 40 - TEST mode (heating power = 100%)

To deactivate TEST mode, repeat the activation sequence.

TEST mode is automatically disabled in any case after 15 minutes.

Only for model ENERGY TOP B 160 - 250


In TEST mode, press the button (detail 7 - fig. 1) to obtain the following operation:

- Top boiler shell on; bottom boiler shell off.
- Top boiler shell off; bottom boiler shell on.
- Top boiler shell on; bottom boiler shell on.

Heating power adjustment

To adjust the heating power, switch the boiler to TEST mode (see sec. 3.1).

Press the heating buttons (+) (-) (details 3 and 4 - fig. 1) to increase or decrease the power (min. = 00 - max. = 100).

Press the button  (detail 8 - fig. 1) within 5 seconds; max. power will remain that just set. Exit TEST mode (see sec. 3.1).



3.2 Start-up



Checks to be made at first lighting, and after all maintenance operations that involved disconnection from the systems or an operation on safety devices or parts of the boiler:

Before lighting the boiler

- Open any on-off valves between the boiler and the systems.
- Check the tightness of the gas system, proceeding with caution and using a soap and water solution to detect any leaks in connections.
- Check correct prefilling of the expansion tank (ref. sec. 4.4).
- Fill the water system and make sure all air contained in the boiler and the system has been vented, by opening the air vent valve on the boiler and any vent valves on the system.
- Fill the condensate trap and check correct connection of the condensate elimination system.
- Make sure there are no water leaks in the system, DHW circuits, connections or boiler.
- Check correct connection of the electrical system and efficiency of the earthing system
- Make sure the gas pressure value for heating is that required.
- Make sure there are no flammable liquids or materials in the immediate vicinity of the boiler

Checks during operation

- Turn the unit on as described in sec. 1.3.
- Make sure the fuel circuit and water systems are tight.
- Check the efficiency of the flue and air-fume ducts while the boiler is working.
- Check the correct tightness and functionality of the condensate elimination system and trap.
- Make sure the water is circulating properly between the boiler and the systems.
- Make sure the gas valve modulates correctly in the heating and domestic hot water production phases.
- Check proper boiler lighting by doing several tests, turning it on and off with the room thermostat or remote control.
- Using a combustion analyser connected to the boiler fume outlet, check that the CO₂ content in the fumes, with the boiler operating at max. and min. output, corresponds to that given in the technical data table for the corresponding type of gas.
- Make sure the fuel consumption indicated on the meter matches that given in the technical data table on sec. 4.4.
- Check the correct programming of the parameters and carry out any necessary customization (compensation curve, power, temperatures, etc.).

3.3 Maintenance

Periodical check

To keep the unit working properly over time, it is necessary to have qualified personnel make an annual check that includes the following tests:

- The control and safety devices (gas valve, flow meter, thermostats, etc.) must function correctly.
- The fume extraction circuit must be fully efficient.
- The airtight chamber must be sealed
- The air-fume end piece and ducts must be free of obstructions and leaks
- The condensate evacuation system must be efficient with no leakage or obstructions.
- The burner and exchanger must be clean and free of scale. When cleaning, do not use chemical products or wire brushes.
- The electrode must be free of scale and properly positioned.
- The gas and water systems must be airtight.
- The water pressure in the cold water system must be about 1 bar; otherwise, bring it to that value.
- The circulation pump must not be blocked.
- The expansion tank must be filled.
- The gas flow and pressure must correspond to that given in the respective tables.



The boiler casing, panel and aesthetic parts can be cleaned with a soft damp cloth, possibly soaked in soapy water. Do not use any abrasive detergents and solvents.

3.4 Troubleshooting

Diagnostics

The boiler is equipped with an advanced self-diagnosis system. In case of a boiler fault, the display will flash together with the fault symbol (detail 20 - fig. 1) indicating the fault code. Flashing of the arrows (details 18 and 24 - fig. 1) together with the error code indicates which boiler shell is faulty.

There are faults that cause permanent shutdowns (marked with the letter "A"): to restore operation press the RESET button (detail 8 - fig. 1) for 1 second or use the RESET on the optional remote timer control if installed; if the boiler fails to start, it is necessary to firstly eliminate the fault.

Other faults (marked with the letter "F") cause temporary shutdowns that are automatically reset as soon as the value returns within the boiler's normal working range.

Table. 6 - Fault list

Fault code	Fault	Possible cause	Cure
A01	The burner fails to light	No gas	Check the regular gas flow to the boiler and that the air has been eliminated from the pipes
		Ignition/detection electrode fault	Check the wiring of the electrode and that it is correctly positioned and free of any deposits
		Faulty gas valve	Check and replace the gas valve
		Insufficient gas supply pressure	Check the gas supply pressure
		Trap clogged	Check the trap and clean it if necessary
A02	Flame present signal with burner off	Electrode fault	Check the ionisation electrode wiring
		Card trouble	Check the card
A03	Overtemperature protection activation	Heating sensor damaged	Check the correct positioning and operation of the heating sensor
		No water circulation in system	Check the circulating pump
		Air in the system	Vent the system
A04	Fume extraction duct safety device activation	Fault F07 generated 3 times in the last 24 hours	See fault F07
A05	Fan protection activated	Fault F15 generated for 1 hour (consecutive)	See fault F15
A06	No flame after ignition stage (6 times in 4 minutes)	Ionisation electrode fault	Check the position of the ionisation electrode and replace it if necessary
		Flame unstable	Check the burner
		Gas valve Offset fault	Check the Offset adjustment at minimum power
		air/fume ducts obstructed	Remove the obstruction from the flue, fume extraction ducts and air inlet and terminals
		Trap clogged	Check the trap and clean it if necessary
F07	High fume temperature	Flue partially obstructed or insufficient	Check the efficiency of the flue, fume extraction ducts and outlet terminal
		Fume sensor position	Check the correct positioning and operation of the fume sensor
F10	Delivery sensor 1 fault	Sensor damaged	Check the wiring or replace the sensor
		Wiring shorted	
		Wiring disconnected	
F11	Return sensor fault	Sensor damaged	Check the wiring or replace the sensor
		Wiring shorted	
		Wiring disconnected	
F13	Fume sensor fault	Sensor damaged	Check the wiring or replace the sensor
		Wiring shorted	
		Wiring disconnected	





Fault code	Fault	Possible cause	Cure
F14	Delivery sensor 2 fault	Sensor damaged	Check the wiring or replace the sensor
		Wiring shorted	
		Wiring disconnected	
F15	Fan fault	No 230V power supply	Check the wiring of the 3-pole connector
		Tachometric signal interrupted	Check the wiring of the 5-pole connector
		Fan damaged	Check the fan
F34	Power supply voltage under 170V	Power mains trouble	Check the electrical system
F35	Mains frequency anomaly	Power mains trouble	Check the electrical system
F37	Incorrect system water pressure	Pressure too low	Fill the system
		Water pressure switch not connected or damaged	Check the sensor
F39	External probe fault	Probe damaged or wiring shorted	Check the wiring or replace the sensor
		Sensor disconnected after activating the sliding temperature	Reconnect the external probe or disable the sliding temperature
A41	Sensor positioning	Delivery sensor disconnected from the pipe	Check the correct positioning and operation of the heating sensor
F42	Heating sensor fault	Sensor damaged	Replace the sensor
A62	No communication between electronic controller and gas valve	Controller not connected	Connect the controller to the gas valve
		Damaged valve	Replace the valve

4. Technical data and characteristics

4.1 Dimensions and connections

Model ENERGY TOP B 80 - 125

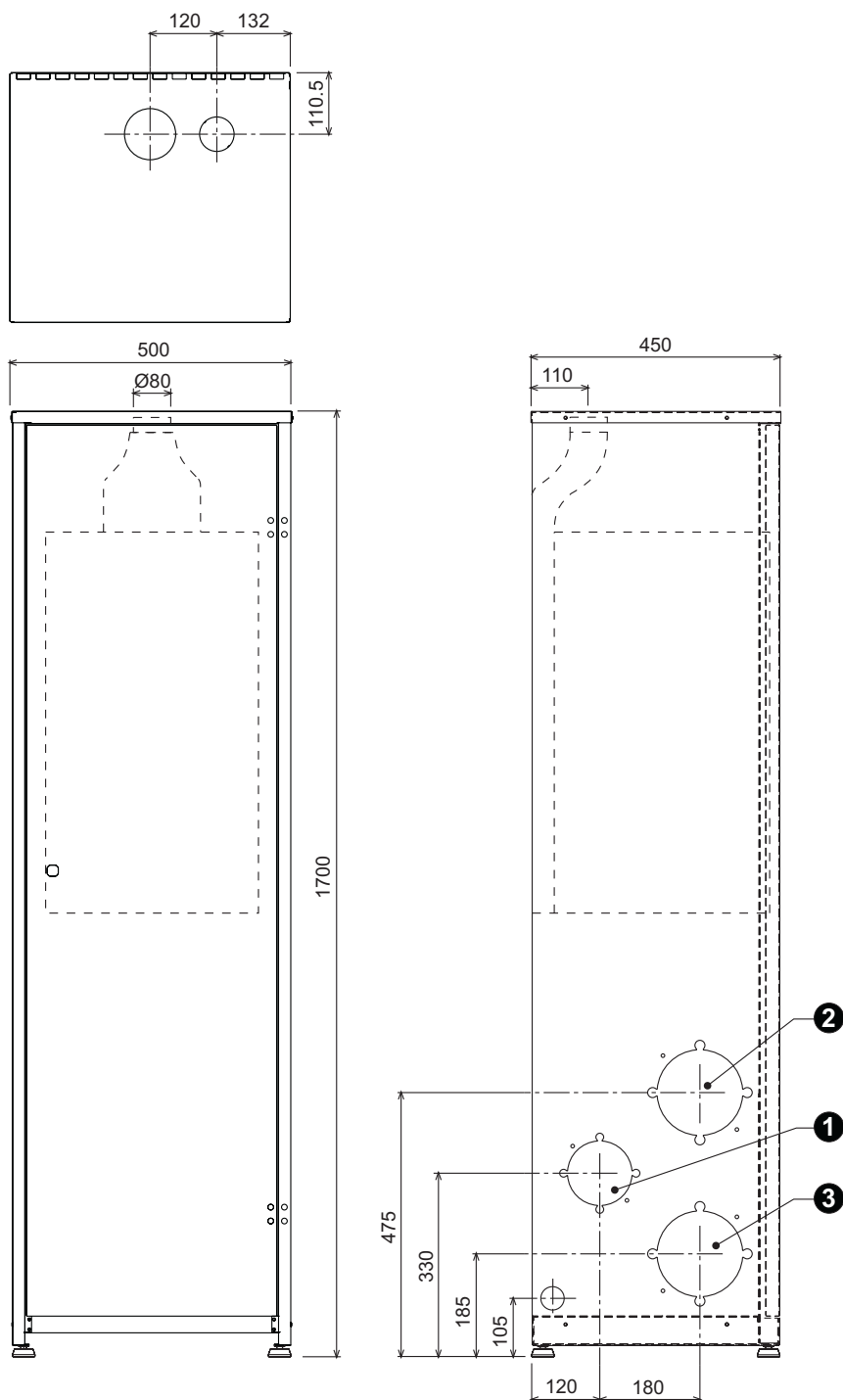


fig. 41 - Dimensions and connections model ENERGY TOP B 80 - 125

- 1 = Gas inlet
- 2 = Heating system delivery
- 3 = Heating system return

Model ENERGY TOP B 160 - 250

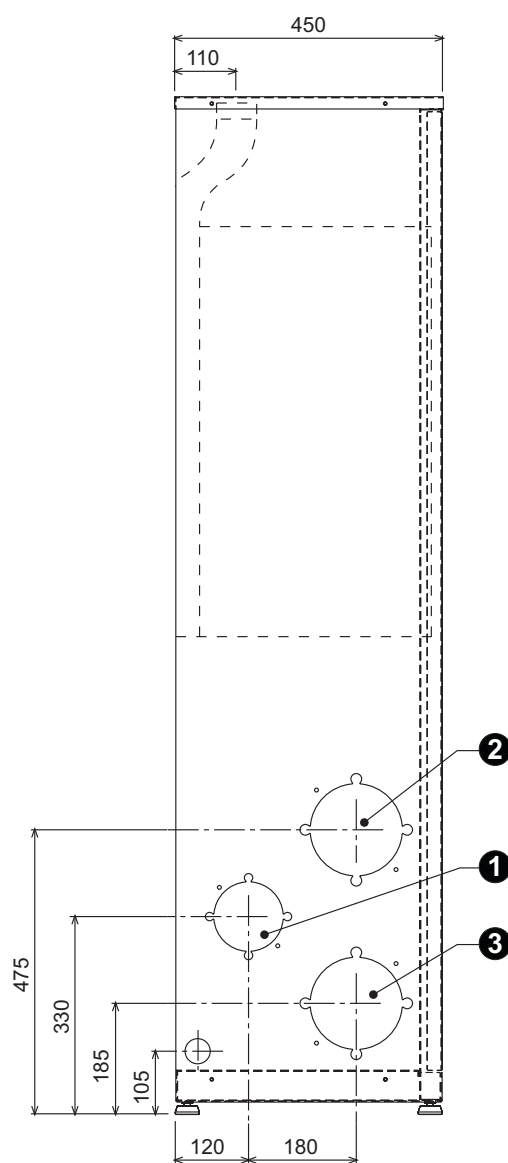
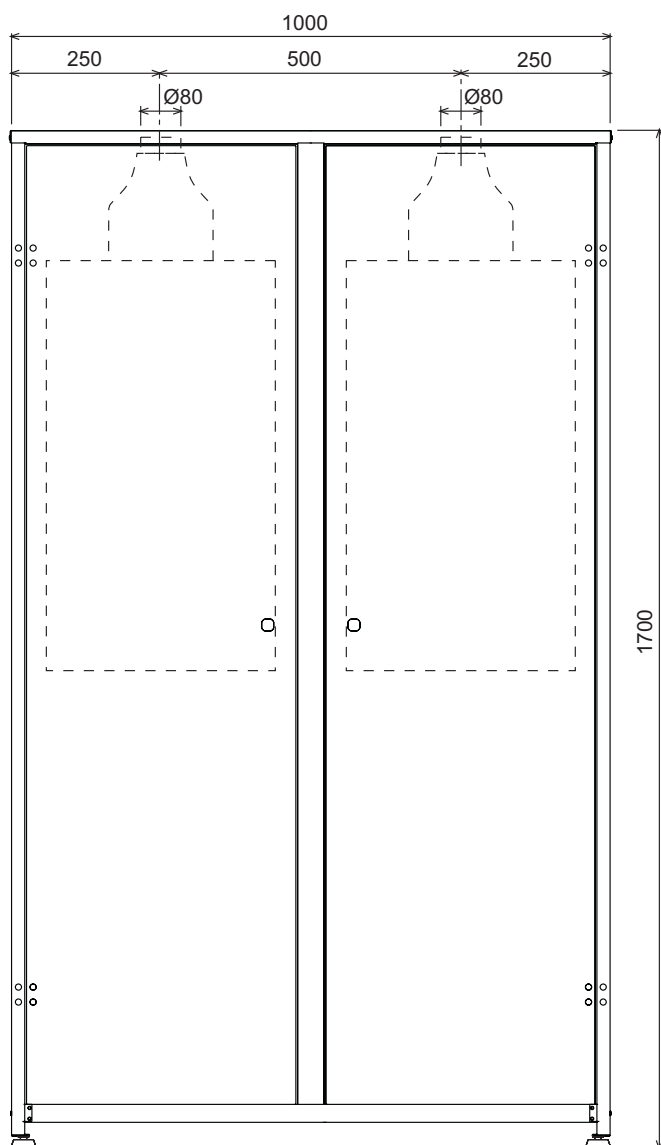
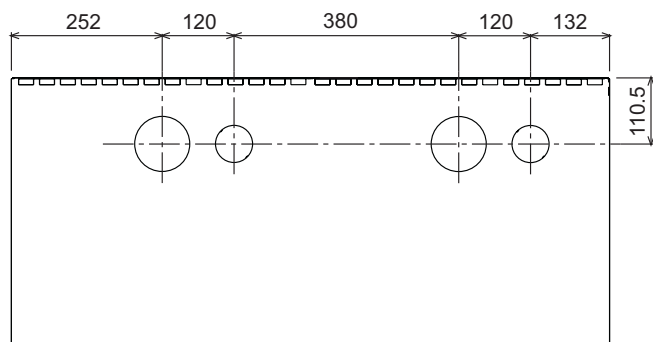


fig. 42 - Dimensions and connections model ENERGY TOP B 160 - 250

- 1 = Gas inlet
- 2 = Heating system delivery
- 3 = Heating system return

4.2 General view and main components

Model ENERGY TOP B 80 - 125

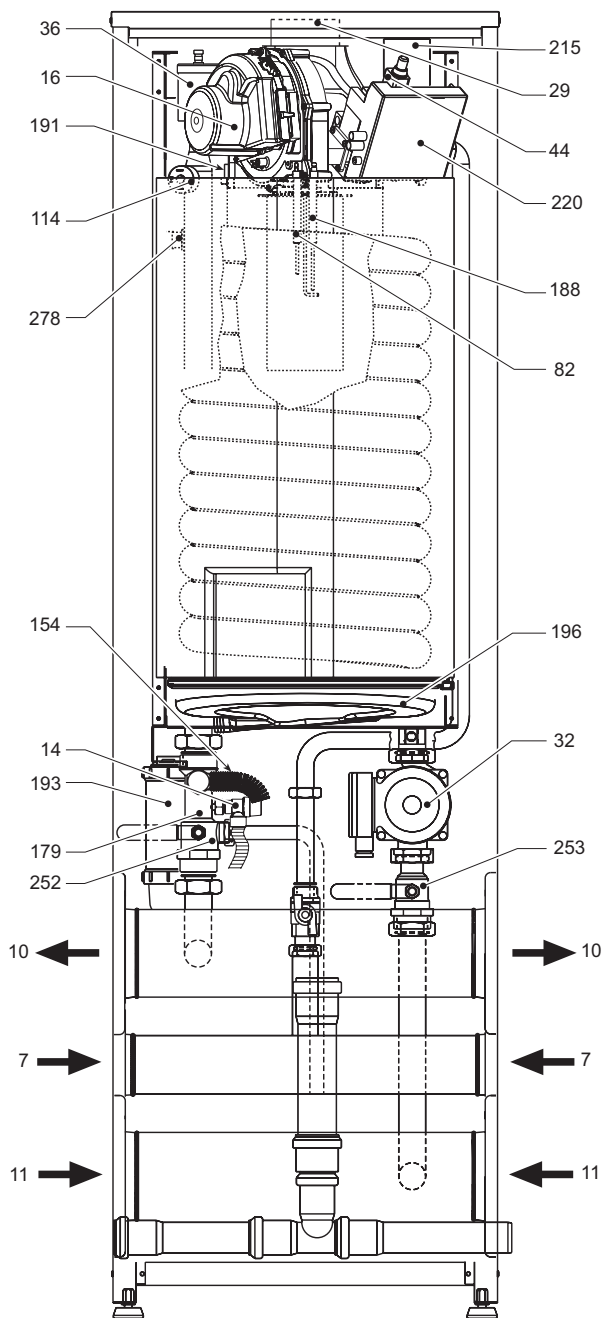


fig. 43 - General view model ENERGY TOP B 80 - 125

- | | | | |
|-----|--------------------------|-----|----------------------------------|
| 7 | Gas inlet | 154 | Condensate drain pipe |
| 10 | System delivery | 188 | Ignition electrode |
| 11 | System return | 191 | Fume temperature sensor |
| 16 | Fan | 193 | Trap |
| 29 | Fume outlet manifold | 196 | Condensate tray |
| 32 | Heating circulating pump | 215 | Air inlet reducer |
| 36 | Automatic air vent | 220 | Ignition card |
| 44 | Gas valve | 252 | 3-way drain and shut-off cock |
| 82 | Detection electrode | 253 | Shut-off cock |
| 114 | Water pressure switch | 278 | Double sensor (Safety + Heating) |

Model ENERGY TOP B 160 - 250

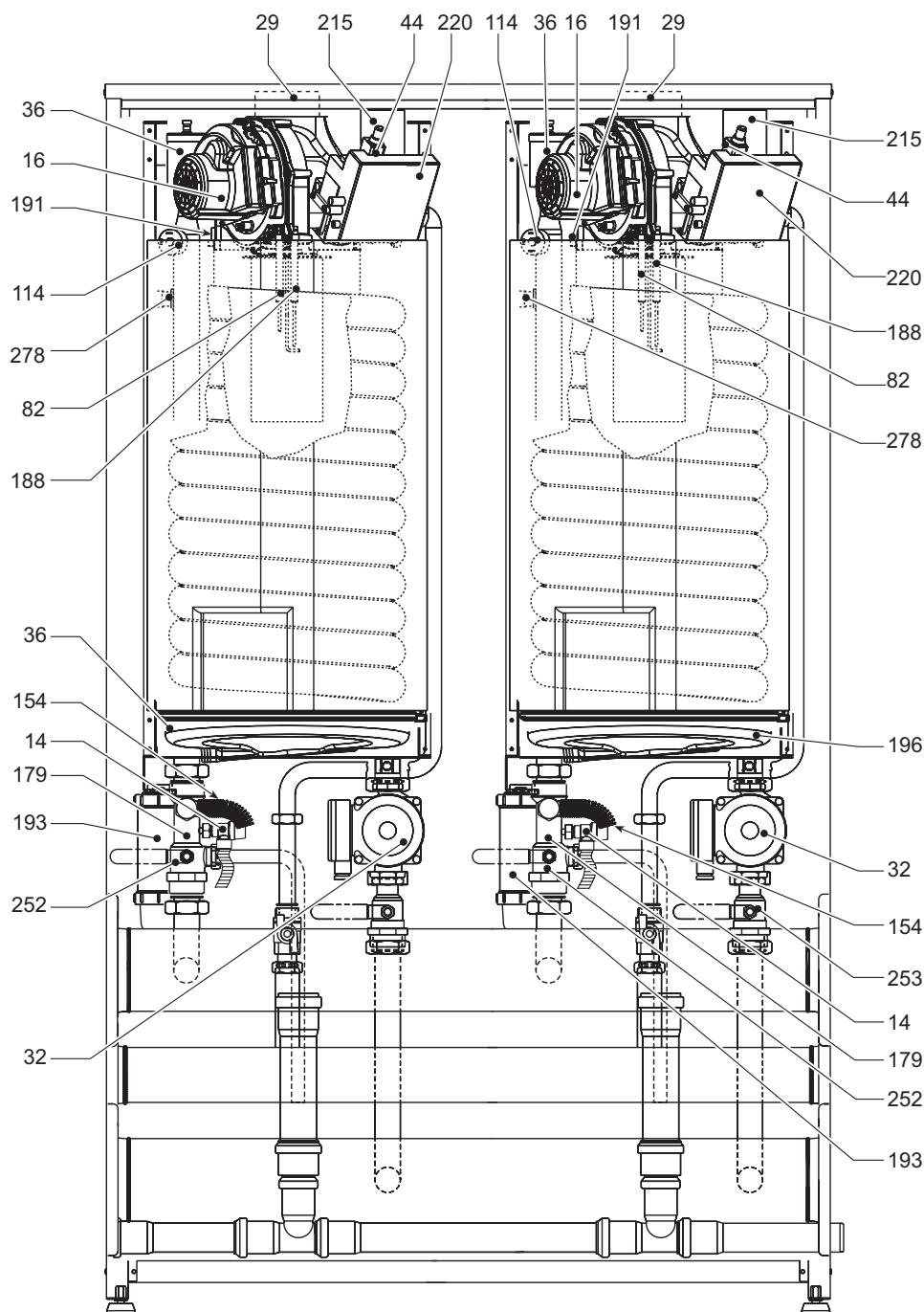


fig. 44 - General view model ENERGY TOP B 160 - 250

- | | | | |
|-----|--------------------------|-----|----------------------------------|
| 7 | Gas inlet | 154 | Condensate drain pipe |
| 10 | System delivery | 188 | Ignition electrode |
| 11 | System return | 191 | Fume temperature sensor |
| 16 | Fan | 193 | Trap |
| 29 | Fume outlet manifold | 196 | Condensate tray |
| 32 | Heating circulating pump | 215 | Air inlet reducer |
| 36 | Automatic air vent | 220 | Ignition card |
| 44 | Gas valve | 252 | 3-way drain and shut-off cock |
| 82 | Detection electrode | 253 | Shut-off cock |
| 114 | Water pressure switch | 278 | Double sensor (Safety + Heating) |

4.3 Plumbing circuit

Model ENERGY TOP B 80 - 125

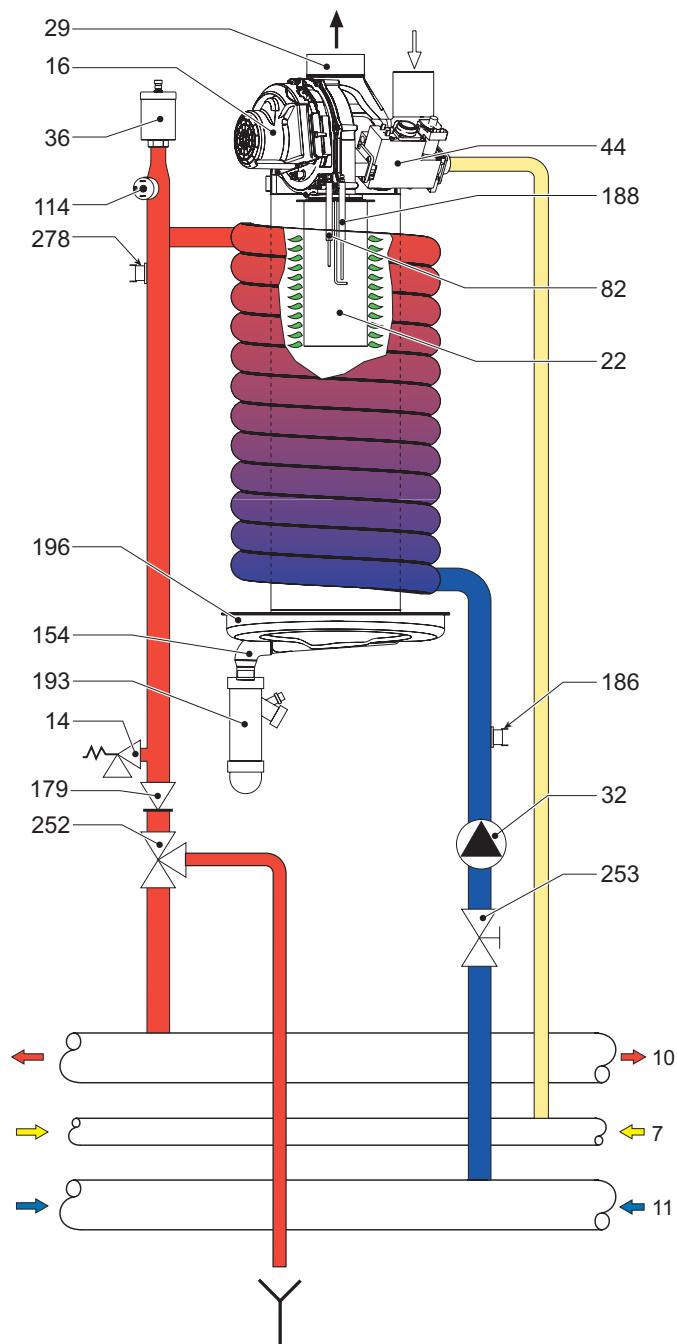


fig. 45 - Plumbing circuit model ENERGY TOP B 80 - 125

- | | | | |
|----|--------------------------|-----|----------------------------------|
| 7 | Gas inlet | 82 | Detection electrode |
| 10 | System delivery | 114 | Water pressure switch |
| 11 | System return | 154 | Condensate drain pipe |
| 16 | Fan | 188 | Ignition electrode |
| 22 | Burner | 193 | Trap |
| 29 | Fume outlet manifold | 196 | Condensate tray |
| 32 | Heating circulating pump | 252 | 3-way drain and shut-off cock |
| 36 | Automatic air vent | 253 | Shut-off cock |
| 44 | Gas valve | 278 | Double sensor (Safety + Heating) |

Model ENERGY TOP B 160 - 250

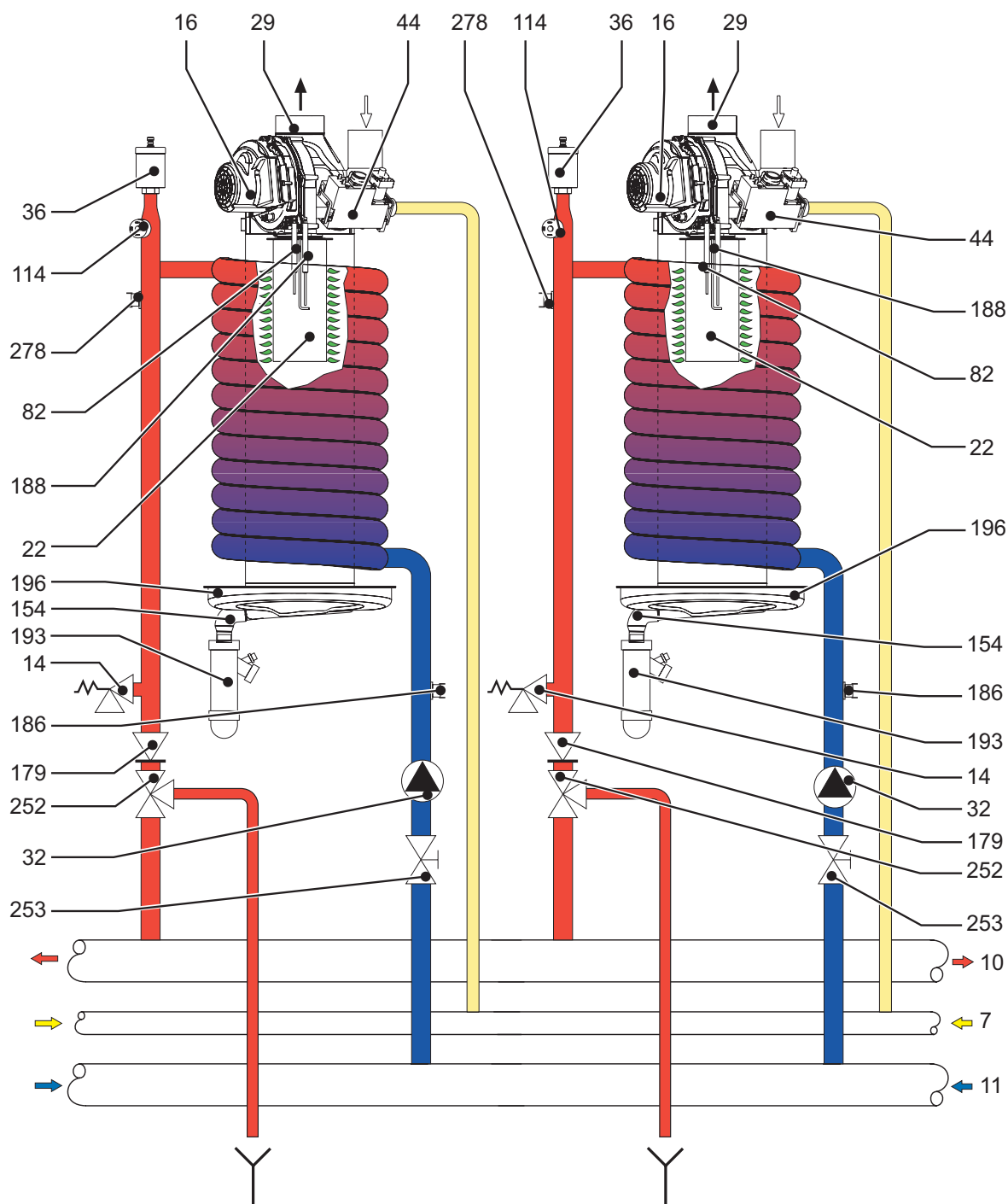


fig. 46 - Plumbing circuit model ENERGY TOP B 160 - 250

- 7 Gas inlet
- 10 System delivery
- 11 System return
- 16 Fan
- 22 Burner
- 29 Fume outlet manifold
- 32 Heating circulating pump
- 36 Automatic air vent
- 44 Gas valve

- 82 Detection electrode
- 114 Water pressure switch
- 154 Condensate drain pipe
- 188 Ignition electrode
- 193 Trap
- 196 Condensate tray
- 252 3-way drain and shut-off cock
- 253 Shut-off cock
- 278 Double sensor (Safety + Heating)

4.4 Technical data table

The column on the right gives the abbreviation used on the dataplate.

Data	Unit	ENERGY TOP B 80	ENERGY TOP B 125	ENERGY TOP B 160	ENERGY TOP B 250	
Max. heating capacity	kW	75.0	116.0	150.0	232.0	(Q)
Min. heating capacity	kW	17.0	25.0	17.0	25.0	(Q)
Max. Heat Output in heating (80/60°C)	kW	73.5	113.7	147.0	227.4	(P)
Min. Heat Output in heating (80/60°C)	kW	16.7	24.6	16.7	24.6	(P)
Max. Heat Output in heating (50/30°C)	kW	79.5	123.0	159.0	246.0	
Min. Heat Output in heating (50/30°C)	kW	18.3	26.9	18.3	26.9	
Efficiency Pmax (80-60°C)	%	98.0	98.0	98.0	98.0	
Efficiency Pmin (80-60°C)	%	98.5	98.5	98.5	98.5	
Efficiency Pmax (50-30°C)	%	106	106	106	106	
Efficiency Pmin (50-30°C)	%	107.5	107.5	107.5	107.5	
Efficiency 30%	%	109	109	109	109	
Gas supply pressure G20	mbar	20	20	20	20	
Max. gas delivery G20	m³/h	7.94	12.38	15.88	24.76	
Min. gas delivery G20	m³/h	1.8	2.65	1.8	2.65	
Gas supply pressure G31	mbar	37	37	37	37	
Max. gas delivery G31	kg/h	5.87	9.08	11.74	18.16	
Min. gas delivery G31	kg/h	1.33	1.96	1.33	1.96	

Efficiency class Directive 92/42 EEC	-	★★★★	★★★★	★★★★	★★★★	
NOx emission class	-	5	5	5	5	(NOx)
Max. working pressure in heating	bar	6	6	6	6	(PMS)
Min. working pressure in heating	bar	0.8	0.8	0.8	0.8	
Max. heating temperature	°C	95	95	95	95	(tmax)
Heating water content	litres	13	15	26	30	
Protection rating	IP	X5D	X5D	X5D	X5D	
Power supply voltage	V/Hz	230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz	
Electrical absorption	W	285	390	570	780	
Empty weight	kg	110	115	190	210	
Type of unit		B23				
PIN CE		0461BS0879				

4.5 Diagrams

Circulating pump head / pressure losses

Pressure losses model ENERGY TOP B 80 - 125

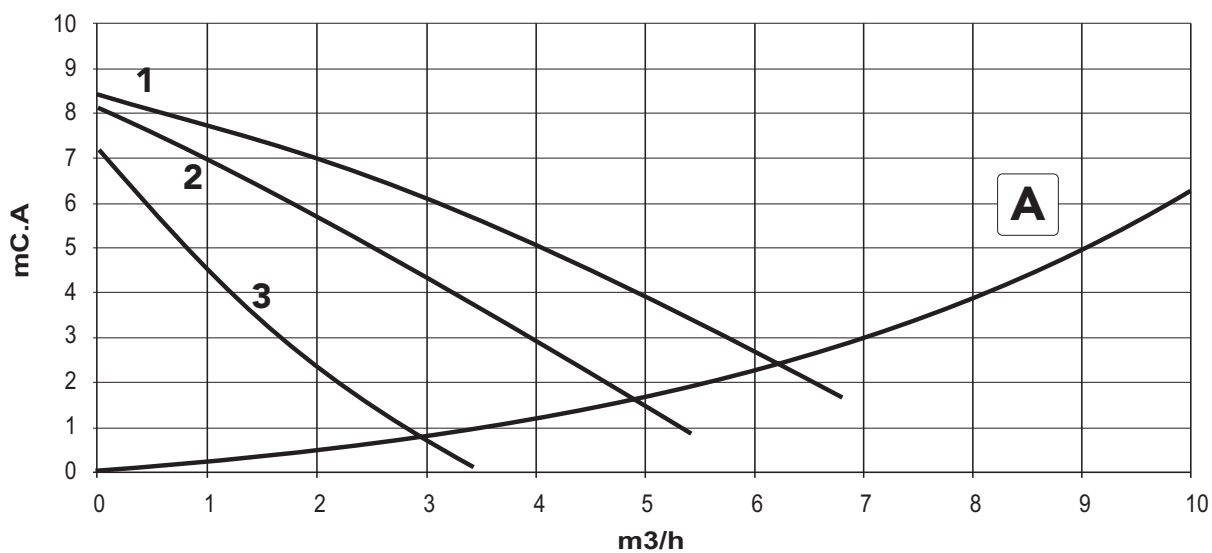


fig. 47

A Boiler pressure losses
1 - 2 - 3 Circulating pump speed

Pressure losses model ENERGY TOP B 160 - 250

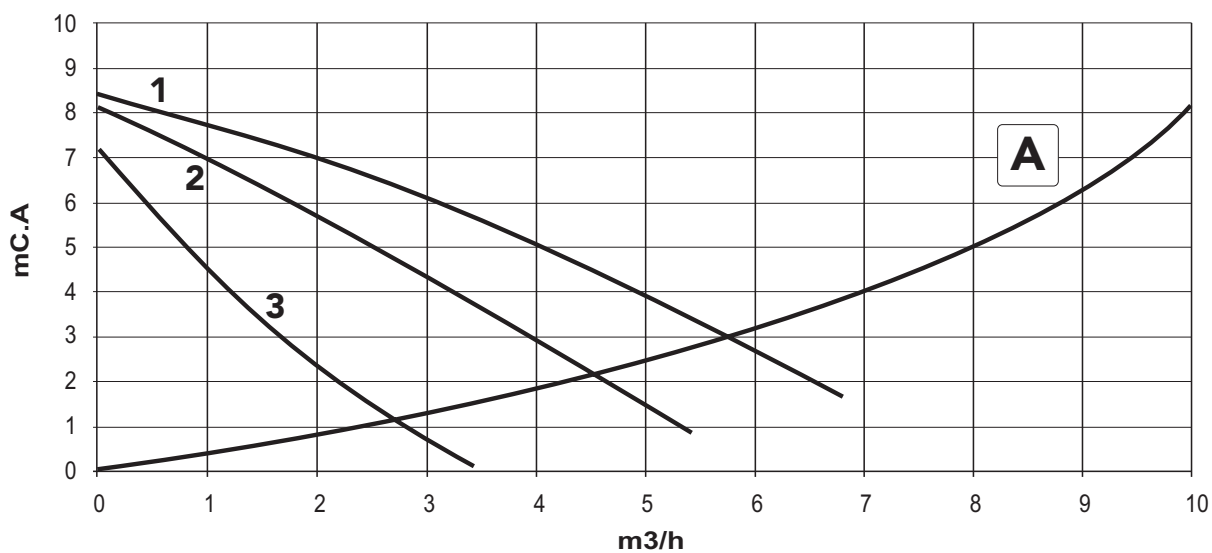


fig. 48

A Boiler pressure losses
1 - 2 - 3 Circulating pump speed



Legend fig. 49

A Only model **ENERGY TOP B 160 - 250**

16 Fan

32 Heating circulating pump

42 DHW temperature sensor (not supplied)

44 Gas valve

72 Room thermostat (not supplied)

72b Second room thermostat (not supplied)

81 Ignition electrode

82 Detection electrode

95 Diverter valve (not supplied)

A = Heating phase

B = DHW phase

C = Neutral

NOTE: For valves with 2 wires and spring return, use the connections B and C

98 Switch

114 Water pressure switch

130 DHW circulating pump (not supplied)

138 External probe (not supplied)

139 Remote timer control (not supplied)

186 Return sensor

191 Fume temperature sensor

278 Double sensor (Safety + Heating)

298 Cascade temperature sensor (not supplied)

299 Input 0-10 Vdc

300 Burner lit contact (voltage-free contact)

301 Fault contact (voltage-free contact)

302 Remote reset input (230 Volt)

306 Heating system circulating pump (not supplied)

307 Heating system second circulating pump (not supplied)